

AMERICAN RAILROAD JOURNAL, AND ADVOCATE OF INTERNAL IMPROVEMENTS.

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D. K. MINOR, EDITOR.]

SATURDAY, FEBRUARY 27, 1836.

[VOLUME V.—No. 8.]

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AMERICAN RAILROAD JOURNAL.

NEW-YORK, FEBRUARY 27, 1836.

☞ All accounts due for the Journal previous to *January last*, and also for the current year, have been inclosed in a previous number, to each subscriber—and we should have said, as we intended to say, in the number containing them, that some errors will probably be found, in consequence of the late disaster, which we are particularly desirous to correct, and therefore request those gentlemen, who detect errors, to give early information, with such particulars as will enable us to correct them properly, and to know to whom, if to any one, payments have been made.

In order to avoid similar difficulties hereafter, and that both parties may know how the account stands on the book, we shall publish a list of those from whom payments have been, and may hereafter be, received, for the current year. By this course, subscribers will be able to correct omissions on our part, and at our cost of postage, if we omit to give them credit.

☞ Those of our subscribers who have

forwarded No. 6 of Vol. 4, in compliance with our request, will please accept our thanks for their kind attention. We have received as many as we require to complete the few sets on hand.

ILLINOIS AND MICHIGAN CANAL.—We are as much pleased to publish the following notice "by authority," as we were, when we first saw it, as a matter of information to our readers.

TO CONTRACTORS.

NOTICE is hereby given to all persons who may feel disposed to take Contracts on the Illinois and Michigan Canal, that the Board of Commissioners have determined to commence that work as early in the spring as circumstances will permit. The Engineers will commence their surveys about the 10th of March, and will have several Sections ready for contract by the first of May. It is therefore expected that definite proposals will be received from that date to the first of June. In the mean time the Board invite an early inspection of that part of the route to Chicago, and will afford any information that may be required of them.

All communications will be addressed to "The Board of Commissioners of the Illinois and Michigan Canal, at Chicago."

By order of the Board.

JOEL MANNING, Secretary.

January 20, 1836.

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☞ For the information of our readers and others, we will observe that we shall be gratified to publish, at any, and all times, similar notices to the above, 6 or 8 times, for five dollars, which may be remitted with the advertisement, and no questions asked.

The distillation of palatable and fresh water at sea has been effected by P. Nicole, of Dieppe, by simply causing the steam arising from boiling sea water in a still to pass through a stratum of coarsely powdered charcoal, in its way to the condenser or worm tub.

PORTSMOUTH AND ROANOKE RAILROAD.

The following letter contains a correct account of the advancement and progress of the Portsmouth and Roanoke Railroad.

Richmond, Va., Feb., 1836.

Dear Sir,—I was informed by a friend recently from New-York, that you wished to have some account of the Portsmouth and Roanoke Railroad—and that you expressed some surprise at not having heard of it since the Report of the Engineer in 1833. It is true the Company have made but little noise. They weighed the difficulties, examined the way, and, like the adorable princess, Parizade, turning a deaf ear to discouraging voices, have marched silently and courageously up to their object.

In little more than two years, they have overcome difficulties considered by many insurmountable: they have crossed the great Dismal Swamp; they have spanned the Blackwater, Nottoway, and Meherrin rivers, with their deep alluvial low grounds; hills have been cut away, forests have been felled, and sixty-two miles of the road completed—which, for levelness, straightness, and faithful execution, is unsurpassed, I will venture to say, by any similar work in our country.

The remainder of the road, comprising fifteen miles, and a bridge across the Roanoke river at Weldon, will be finished in the course of the summer. The bridge is 1760 feet in length, resting on 12 stout stone pillars, some of them upwards of 60 feet above the foundation; the floor is placed about 4 feet below the top of the framework, the railroad track in the centre, and so arranged that common road waggons may pass over it, or on either side of the rails.

The Company have now two locomotive engines running, one of Berry's make, and one of Stephenson's. The coaches are no

the three-bodied plan (of Green); the cars are all roofed, and provided with locks and keys—they are different in appearance from any I have seen, and are said to be on an improved plan. Between the present point of termination and Halifax (which you know is on the main mail route), the distance is 25 miles. This is accomplished in *Kendall* four-horse post-coaches, and, agreeably to the Companies' advertisement, you can leave Halifax at 5 A. M. to-day, and either breakfast to-morrow in Baltimore, or dine in Philadelphia. It is believed that this route cannot fail to command the whole southern travel. Turn to your map, Mr. Editor, if you please, and follow the line of the Camden and Amboy Railroad to Philadelphia—thence by the Delaware and Newcastle Railroad—or by the Wilmington and Port Deposit Railroad—and the Chesapeake Bay to Norfolk—or, if you prefer it, pursue the line of the contemplated Railroad from Philadelphia to Cherrytown, on the Eastern Shore of Virginia, and across the Bay to Norfolk—thence by the Portsmouth and Roanoke Railroad to Weldon—thence by Railroad to Wilmington, N. C.—and thence by steamboats 120 miles to Charleston, S. C. Think you we will be presuming too much, when we claim for the Portsmouth and Roanoke Railroad the importance of a link? No, sir, we will not be content with this hackneyed recommendation—I would you should consider this road, what in fact it is, a *corp* of the *great circular chain* of improvement described by the Baltimore and Washington Railroad—the Potomac River, as far as Potomac Creek—the Richmond and Fredericksburg Railroad—the Richmond and Petersburg Railroad—and the Petersburg, Gaston, and Raleigh Railroad, and the Raleigh and Columbia, or Raleigh and Charleston Railroad. Now, sir, will you bear with me one moment, while I present a comparative view of the cost of these two lines of improvement? Take Baltimore as the starting point, and follow the line of the last mentioned route, and we have, first—

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| For the Baltimore and Washington Railroad, - - - | \$1,500,000 |
| Steamboat from Washington to Potomac Creek, - - - | 100,000 |
| Railroad from Potomac Creek to Richmond, - - - | 1,000,000 |
| Richmond and Petersburg Railroad, - - - | 550,000 |
| Petersburg, Gaston, and Raleigh Railroad, - - - | 1,500,000 |
| Raleigh and Charleston Railroad, (240 miles), - - - | 2,400,000 |
| | \$7,050,000 |

Cost of railroad and steamboat navigation from Baltimore to Charleston, via Washington, Richmond, Petersburg, and Raleigh.

We will now proceed on the route by Norfolk and Portsmouth.

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| For steamboats on the Bay, - | \$200,000 |
| Portsmouth and Roanoke Railroad, - - - | 650,000 |
| Roanoke and Wilmington Railroad, - - - | 1,000,000 |
| Steamboat from Wilmington to Charleston, - - - | 100,000 |

Cost of Railroad, \$1,950,000 and steamboat navigation from Baltimore to Charleston, via Norfolk, Portsmouth, Weldon, and Wilmington, N. C. Here is a result of *five millions one hundred thousand dollars* in favor of the route by the Portsmouth and Roanoke Railroad. Can capitalists hesitate one moment in which to invest? Is there any who doubt as to which route the traveller will give the preference?

I could add other facts equally as striking, such as greater economy and despatch in the travel by the Portsmouth line; and I have said nothing about the great Western Railroad which the Company have in contemplation, up the Roanoke by Danville to Evansham, and thence to intersect the Charleston and Cincinnati and the New-Orleans and Nashville Railroads. The importance of this work, not only in connexion with the Portsmouth and Roanoke Railroad, but as a medium of communication between Philadelphia and New-York, with the West and Southwest, I may at some other time attempt to point out—when I see if Mr. Editor receives this in good part.

I am, Sir,

Yours, very respectfully,

A. P.

We would invite the earnest attention of our readers to this clear and able document.

We are glad to see that, abandoning the contracted view of the subject taken by some, Mr. Mack places the matter on the broad ground of general utility,—asking for the advancement of the measure as favorable to the best interests of the State—insisting upon it as the only means of self-defence against the many rival improvements in Pennsylvania and Maryland.

The interesting nature of this report will, we are convinced, notwithstanding its length, obtain for it a careful perusal.

REPORT

Of the Committee on Railroads, on the bill from the Assembly, entitled "An Act to expedite the construction of a railroad from New York to Lake Erie," &c.

Mr. Mack, from the standing committee on railroads, to whom were referred the bill from the Assembly, entitled "An Act to expedite the construction of a railroad from New York to Lake Erie," the memorial of the mayor, aldermen and commonalty of the city of New York; the resolutions of the mayor and common council of the city of Brooklyn; and the petitions of sundry inhabitants of the counties of Westchester, Delaware, Genesee, Allegany and Cattaraugus, in favor of the passage of said act, with a remonstrance from the county of Orange, and so much of the Governor's message as relates to the same subject—

Reported:

The bill authorizes a loan of the credit of the State to the New York and Erie Railroad Compa-

ny, of \$3,000,000; for which amount stock is to be issued, bearing an interest of four and a half per cent. per annum, and redeemable any time after 20 years; for the payment of the interest of which, and the ultimate redemption of the stock, the said road and its appurtenances, and its tolls and income are pledged.

From the examination the committee have been enabled to give to the subject, they feel bound to accompany the bill, which has been submitted to their consideration, with an acknowledgment of their conviction, that the work which it is designed to add is justly characterized by his Excellency, the Governor, as an "extensive and useful enterprise." They accord, also, with him, in the views he has expressed, that "the magnitude of the undertaking the public benefits it will confer, and the deep interest felt by the inhabitants of the action of the State, through which this extensive line of communication is to pass," have induced "the company again to ask the aid of the Legislature," to facilitate and hasten its accomplishment.

A work of such magnitude, extending from the commercial metropolis, a distance of 450 miles, through the interior of the State to the inland seas, and connecting with those navigable waters which stretch through the boundless valleys of the fertile west, cannot fail, when completed, to produce the most important and beneficial results. It will infuse joy into the hearts of thousands of our fellow citizens, who, with honest and persevering toil, are contending against local disadvantages, excluded from a participation in the benefits of that invigorating system of internal improvements which has been proudly cherished as the emanation of enlightened minds, and the progressive source of the general prosperity. It will develop new resources of wealth and enterprise. It will impart a new stimulus to individual industry. It will check the tide of emigration, now flowing westward, beyond the limits of our State, and render the southern and western portions of our State desirable resting places to the hardy pioneers from the east. Their forests will be subdued; their population increased; their soil cultivated; and extensive agricultural improvements induced, where the energies of the husbandman have been hitherto depressed, by an inability to compete with those favored sections which have possessed, through the medium of the canals, more cheap and expeditious avenues to market.

The numerous petitions which are before the committee, most of which accompanied the bill from the Assembly, furnish evidence that in this light the project is regarded by the people of those counties through which the road is designed to pass, and of those favorably situated for connecting with it, by lateral railroads or canals, now in progress or in contemplation. Public feeling, indeed, appears to be deeply seated, and rapidly extending, in favor of this great and important enterprise. The number, the language, and the spirit of the petitioners, are commensurate with the vast object they have in view, and evince a zeal and perseverance which will not stop short of its accomplishment. They ask, what as citizens, as freemen, they have a right to ask—the aid and countenance of the State, in a most laudable endeavor. They expect, what they have a right to expect, that the representatives of an enlightened and patriotic people, of which they, themselves, constitute so large a proportion—that the administrators of a government, instituted for the general benefit—will yield a kind and respectful, if not a favorable, response to their petitions.

But, it is not upon the ground of extensive local advantages and improvements to be secured, nor of the just expectations and claims of those of its citizens who have hitherto derived few benefits from the vast expenditures of the general funds for the construction of public works, that the call upon the State, to promote the immediate completion of the undertaking, is alone predicated. It rests upon a broader basis. It appeals, not only to a spirit of reciprocity, as between the various sections of a great community, but to those elevated views and feelings which cherish, with a just pride, the high character, the influence and prosperity of the State, as a prominent member of the Union.

This State possesses a soil unsurpassed in strength and fertility, and adapted to almost every species of agricultural production. Its manufacturing facilities are unrivalled, and the treasures of its mountains and its forests have scarce begun to be developed. But to its commercial enterprise and advantages is it most materially indebted for its

unparalleled progression in population, wealth, influence and prosperity.

The city of New York, commanding one of the finest harbors in the world, and possessing a population peculiarly active and enterprising, has been the great mart of the Union for commercial operations, both foreign and domestic. Nor have the constituted authorities of the State, by the improvement of natural and the construction of artificial channels of communication, been unkindful of the means which were requisite to secure to its commercial emporium this desirable pre-eminence.

But the spirit of improvement is abroad—it is active and progressive. Its operations cannot be confined to a narrow and sectional limits—to particular modes and methods—or restrained by that contracted policy whose views are bounded by the present. Other States have been stimulated by our examples. In a spirit of emulation, laudable in itself, and which it becomes us rather to counteract than to complain of, they are pressing forward for the prize which we have so long enjoyed.

"The memorial of the mayor, aldermen and commonalty of the city of New York," in favor of the passage of the bill now before your committee, emanated from a body of citizens whose experience, sagacity and vigilance entitle their views to respect, is, upon this point, and many others connected with the subject, worthy of serious consideration. It sets forth forcibly, and, as your committee conceive, truly, "that the construction of the proposed road has become indispensably necessary to this metropolis, in order to preserve and extend the lucrative commerce it has heretofore enjoyed with the populous and increasing territories of the west; that the existing channels of intercourse, rendered useless by the severity of our climate for a large portion of the year, have become in a great degree inadequate to that object;" and "that the energetic and persevering exertions of the canal and rail-road companies, chartered and powerfully patronized by the Atlantic States south of this port, to divert from the city and State of New York the great and expanding commerce of the western communities, demand immediate and corresponding efforts on our part to provide without delay new and additional facilities of commercial communication between this city and the interior." The memorialists express their entire confidence in the projected rail-road, and that it "has become an object of transcendent importance to the public, not only in maintaining the commercial advantages of this city, but also in affording to the large and increasing population within the interior of our own State the means of rapid, cheap, and regular communication with the seaboard." And, among many just and important considerations urged, and for which they refer to the memorial itself, the following has impressed itself with peculiar force upon the minds of the committee: "That in view of the position occupied by the State of New York in respect to the adjacent members of the National Union, the accomplishment of this work will become of paramount importance, by securing in time of war the means of rapid communication through our own territory for the military forces of the republic, and at all times the expeditious passage of the public mails and consequent diffusion of commercial intelligence."

The young, enterprising and rapidly increasing city of Brooklyn, similarly located, and relying for its prosperity upon the same commercial advantages and business sources as the city of New York, has responded to the foregoing views in the recent resolutions of its mayor and common council which were referred to the committee.

Your committee are, however, aware that many of the public works now in progress in the western States, and to accomplish which the governments of those States have made such large and liberal appropriations, are designed to connect with the works of this State, and that most of them have been originated with the direct object of an ultimate connection with the New York and Erie railroad. But there are others, particularly those of Virginia, Maryland and Pennsylvania, which are in their conception and progress purely of a rival character.—The streams of the western valleys, and the canals of Pennsylvania, Ohio, &c. are navigable for several weeks earlier in the spring, and later in the fall, than the canals of this State, and the railroads of those States, rapidly increasing in numbers and extent, may be used at all seasons of the year. To those western waters, to those channels of communication which we have regarded as the outlets and tributaries of our commerce, Pennsylvania, and Maryland, and Virginia, are pressing forward with

rapid strides. To this great object the energies and resources of Pennsylvania have been especially directed. Aided by a gigantic monied institution, with which she has formed a recent alliance, her efforts are continued and increased, with a determined zeal, if not with a sound discretion. And however disreputable and ultimately dangerous we may deem the means to which she has resorted to accelerate the accomplishment of her object, we should not close our judgment to the conviction, that unresisted, they are adequate to the end in view.—

"Money is power," and when auxiliary to ambitious designs and inveterate rival interests, can only be successfully counteracted by the persevering efforts of honest enterprise, of virtuous and patriotic energies. We may raise the voice of indignation, we may point the finger of reproach, but these expressions will avail us little. If the government of this State, to which the people have been taught to look for aid in these matters, remains indifferent, or worse than indifferent, to the rivalries that threaten us; if it not only refuses to lend or contribute its resources, but withholds its countenance and encouragement from the patriotic exertions of its citizens, what must be the natural, what the inevitable, consequences?

But, fortunately, as your committee believe, the State is not inclined upon to put forth any extraordinary exercise of its power, or to make any corresponding appropriation of its resources. The way is plain, and free from difficulties or dangers. It demands but the improvement of natural advantages. It claims but the exercise of that spirit of liberality and patriotism which have hitherto prevailed in our councils. The New York and Erie railroad, not merely in its ultimate, but by its speedy completion, covering as it will the whole contested ground, cannot fail to secure the anticipated advantage of these improvements which other States in the spirit of kindness and reciprocal intercourse are extending towards us, and to counteract the tendency and design of those works, the original object of which was to draw from this State its deeply cherished commercial advantages. Passing for seventy miles through the valley of the Delaware, traversing the broad valleys of the Susquehanna and its tributary streams, touching upon the headwaters of the Allegheny, and connecting with the noble expanse of inland waters, Lake Erie, at a point where its navigation within this State is for the shortest period obstructed by the ice of winter—this railroad must not only be the medium through which incalculable amounts of merchandise will pass from the city of New York to the far, the fertile and rapidly populating west, but must render tributary to it those channels of communication which would otherwise divert the trade from our southern and western counties, supplying through those channels the northern and middle counties of Pennsylvania with the merchandise, the salt and plaster of this State, and drawing to our markets in return much of the coal and other products of those regions.

Without, therefore, entering into further detail or illustration at present, the committee repeat their conviction, that this enterprise, from its magnitude and extent, and the important results which must flow from it in a commercial, physical and moral point of view, is worthy of the recognition and patronage of the State, as an important branch of its system of internal improvements. And they concur with his Excellency the Governor, that "the mode and amount of the assistance which the State ought to contribute towards the accomplishment of this work, deserves our mature deliberation, uninfluenced by any other views than such as are inspired by a comprehensive regard for the public good."

In relation, however, to the "mode" of this assistance: the friends of this project originally and zealously urged, that as a legitimate public improvement, the work ought to be undertaken by, and constructed at the expense of, the State. Had they persevered in this object, it is by no means improbable they would have eventually succeeded; for it cannot be believed that with an application so just extended before it, the Legislature would have authorized in preference the further expenditure of twelve or fifteen millions of dollars for the purpose of enlarging the Erie canal. But our constituents and fellow citizens who were the applicants in this case, ever ready to sacrifice their own wish to enlarged considerations of the general good, yielded to the objections which met them, that the treasury was impoverished, and that the State could not, until the obligations incurred for the construction of the

canals were discharged, engage in a work of such magnitude, without incurring an increased and oppressive debt, and subjecting the people to taxation. The naked favor of an act of incorporation was finally granted to them, and a hope was held out and entertained, that the State would subscribe adequately to the stock. But, when a consummation of this hope was sought for and expected, they were met by the plausible if not reasonable objection, that it would be manifestly improper, and a dangerous precedent, for the State to become a co-partner with an incorporated company.

As a dernier resort, therefore, those who have cherished a deep interest in the speedy accomplishment of this important work, have solicited assistance from the State, in the mode which the bill from the Assembly provides. And whatever opinion the committee may entertain as to the preference to which either of the first mentioned modes might, under other circumstances, be entitled, they consider that point as having been decided by our predecessors; and that it would be ungenerous and unjust to array the merits of exploded propositions to prejudice or defeat the only one which now remains to be adopted.

The principal points, then, which appear to remain for the consideration of the committee, are.—

1. Whether the company, which has been authorized to construct this work, and by whom and on whose behalf the proposed aid has been asked, has organized and progressed in good faith; whether its proceedings have been thus far judicious, and such as to justify a confidence that it intends to persevere in the undertaking, as rapidly as its pecuniary means will warrant, and with a view to, and a prospect of, its ultimate completion?

2. Will the entire road when constructed, or the several divisions thereof as required by the bill to be completed, be of a sufficient value, and yield an adequate revenue, to secure the State against liability to pay the interest, and against ultimate loss upon the proportionate amounts and the aggregate sum for which the credit of the State is proposed to be loaned?

The documents accompanying and referred to in the Governor's message, and others which the committee have had an opportunity of examining, furnish the material facts upon the first branch of inquiry.

From the report of the directors of the company filed in the office of the Secretary of State on the 12th January, 1836, which is verified by the oaths of the president and comptroller of the board, it appears that 23,621 shares of the capital stock (amounting to \$2,382,100) have been subscribed, upon which instalments have been paid to the amount of

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| | \$223,760 00 |
| Interest on the sums deposited, | 2,604 00 |
| Total receipts, | \$226,364 00 |
| Paid out for various purposes, | 32,621 38 |

Balance on hand, deposited at an interest of 5 per cent., \$189,742 62

Since the report of Judge Wright, the engineer appointed by the State to survey the route of the road, which was communicated to the Legislature at its last session, the company have appointed him their chief engineer; and in August last associated with him in consultation two engineers of great experience and reputation, viz: *Mercure Robinson*, of Pennsylvania, and *Jonathan Knight*, of Maryland. To this board of engineers the surveys, and profiles, and the general plan of the whole work, were submitted. They also proceeded to view a difficult point of the proposed work, and their conjoint report, (which accompanied that of the directors above mentioned,) "in the belief of the directors, is entitled to full confidence in every respect."

In November last, the directors put under contract a comparatively difficult section of their road, extending from Calicoon creek to the village of Deposit, in the valley of the Delaware, a distance of about 40 miles. This section was taken by twenty six contractors of approved responsibility, several of whom had already commenced the execution of their respective portions of the work. These contracts amounted to \$313,572, or \$7,742 per mile, and exhibit a saving in the expense of graduating this section of \$52,736, or 16-1-2 per cent. below the estimate as submitted (in Judge Wright's report) to the Legislature.

In closing the above mentioned report, the directors state, "that they have carefully and attentively

ly examined the route of their proposed road, and compared its facilities of execution with those presented by other works of similar character, and by that examination, and especially by the results which they have recently obtained by actual experience, as is above stated, of the cost of graduation, they have become fully convinced that the whole work can be completed upon the plan recommended in the report of the board of engineers above referred to (including vehicles to the amount of five hundred thousand dollars) for a sum not exceeding, and probably falling considerably short of, six millions of dollars; that the road when finished will admit of the use of locomotive engines throughout its whole extent drawing loads of at least forty tons nett, and at a rate of speed which will reduce the time of passage within forty hours from the Hudson river to Lake Erie; and that if the necessary funds shall be secured without undue delay, the whole work can easily be completed and put in operation within five years from this date."

In their "first annual report" to the stockholders, Sept. 1835, the directors give a more detailed account of their previous operations, the surveys and estimates of the engineers, the general outlines and features of the road, and the ultimate advantage and income to be derived from it. The entire cost of a single track, from the Hudson to Lake Erie, with the vehicles and other necessary apparatus, including \$525,492 for contingencies beyond the estimates of the engineers, is stated at \$6,000,000 requiring a net revenue of \$360,000 to produce an interest of six per cent. per annum upon the investment. "The final accomplishment (they say) of this enterprise has only become a question of time; and the assistance of the State is deemed necessary to satisfy the expectations of the people in reference to it, to hasten its completion, and the more speedily and certainly to secure the extensive commercial advantages and public benefits which must result therefrom. And they add: "The board of directors, upon whom has devolved the responsibility of conducting this important work, believing it to be the only mode of resuming the interests of this city from the danger in which they are placed and feeling that the exigency of the case demands their best efforts, PLEDGE THEMSELVES TO THE STOCKHOLDERS AND TO THE COMMUNITY, to spare no exertions on their part to carry the enterprise steadily onward to a successful issue."

With these facts and declarations before them, with a personal knowledge that many of the directors and stockholders of the company are gentlemen of worth and intelligence, whose character for pecuniary responsibility, business probity and moral integrity, is above suspicion or reproach—the committee cannot entertain a doubt, that the stock as stated has been subscribed, and the road commenced in good faith. And they believe that full confidence may be reposed in the directors faithfully to expend all moneys which may be entrusted to them for the purpose, and in the intentions and persevering efforts of the company to prosecute the work with all practicable and prudent despatch to its final completion.

In respect to the probable revenue of the road, one of its various portions when completed, upon which reliance may be placed to meet the payment of interest, and finally to reimburse the principal of the stock loaned, the committee are aware that it is a point upon which there have been, and may still remain, honest differences of opinion. Works of this description are generally productive in proportion to their extent and utility. If they facilitate travel and commercial intercourse, and are in these respects without competition—if they furnish new, cheaper and more expeditious channels for the conveyance of agricultural productions and manufactured articles to and from market—and embrace a range of territory in which these productions are numerous, or may be materially increased—their utility is established, and a profitable return inevitably follows. But by what rule of mathematics can we measure the benefits or the income of any projected work of internal improvement, in a young, a fertile and increasing country like this? We may reason from analogy—we may judge from comparison—we may find in the experience of the past a guide to direct us in our anticipations of the future; but the resources of nature, which chance, or the industry of man may develop—the inventions and improvements which genius and enterprise may accomplish, and the results which may follow them—are not to be determined by the rules and principles of the exact sciences: they are not to be scanned

by prophetic vision, or to be comprehended by human foresight and sagacity.

When the Erie Canal was projected, and commenced, its enemies were more confident in their predictions against, than were its friends in their anticipations in favor of, its productiveness. The advocates of this great work were at a loss for data upon which to found their estimates of revenue; and the statements upon which they ventured have fallen far short of constituting a just basis for the reality. Had this canal been adequate, and had its effect been, to accommodate only the business of the country in its then existing state of improvement, and the natural and unaided increase of its population and resources—had not its construction operated like a charm to develop the resources, excite the enterprise and increase the population, wealth, and agricultural products of the territories through which it passed, far beyond what was anticipated or predicted,—it would not to this day have yielded an income sufficient to pay the interest on the cost of construction and the expense of keeping it in repair. The sources of its revenue have been principally those of its own creation. The benefits which it has so widely and liberally dispensed have returned upon it, and a proportionate income is the natural result.

To assert that the New York and Erie Railroad will prove equal in commercial importance, in general utility, and in consequent revenue, to the Erie canal, may be assuming for it a higher character than it merits. But that its prospects in these respects are not inferior to those claimed for that great work in its incipient stages, would not be an unreasonable position.

Your committee have examined briefly the general features of the road, in illustrating its character as a public improvement. They will recur to these features, as applicable more particularly to the subject of revenue.

By the maps and profiles of the surveys, it appears that "more than four-fifths of the whole line of 493 miles lies immediately upon the banks of rivers and their tributaries: that one uninterupted section of one hundred and twenty-five miles long is situated on the margin of the Susquehanna and its principal branches; another, of eighty-three and a half miles, along the Allegheny and its tributaries; one of sixty-nine and another thirty-nine miles along the Delaware and its principal confluent; and that other minor sections along the smaller streams, including nineteen miles in the valley of the Ramapo, make up a total amount of at least four hundred and twenty miles, in which the route of the road obtains the advantage of following the margin of water courses. Of the remaining portions of the line, embracing in the aggregate about sixty miles in length, where the route crosses the valleys of the streams more or less transversely, about thirty miles are comprised in different sections within the counties of Sullivan, Orange, and Rockland, about twenty miles between the head waters of the Delaware and those of the Susquehanna at Chenango and the remaining ten miles in the descent to Lake Erie."

From this topographical view of the route of the road, it will be seen that it embraces a range of country of most favorable aspect, whether taken in reference to the facilities it presents for a cheap construction of the work, or to its capacity of contributing to the revenue of the road in the transportation of persons and property.

The question of the mechanical capacity of the work to transport in large masses the products of the country with cheapness and rapidity, appears to be abundantly settled on the consultation of competent engineers, whose report is among the documents referred to by his excellency the Governor. The favorable result obtained upon that consultation, furnishes abundant evidence of the capacity of the road, and is summed up by the board of directors in their annual report as follows: "That loads of sixty tons gross, (or, deducting the weight of cars forty tons nett,) may be drawn in a single train from the Hudson to Lake Erie, and at an average speed of from twelve to fourteen miles to the hour; that with the rate of speed augmented one half, a locomotive engine will nevertheless suffice to transport two hundred passengers and their baggage; that no stationary engine will be requisite on any part of the work; and that one, or at most, two auxiliary engines only will be requisite on the whole length of the line."

As it is, therefore, sufficiently demonstrated that the road, when constructed, will be capable of transporting property and persons in large quantities, and with great expedition, the question again

recurs, what amount of business it may reasonably expect, and what amount of revenue will be derived therefrom?

The route of the road traverses no less than ten of the counties of this State, viz: Rockland, Orange, Sullivan, Delaware, Broome, Tioga, Steuben, Allegany, Cattaraugus and Chautauque, embracing about one-third of the territorial area of the State, and already numbering a population of 293,408 inhabitants; and this, too, without including the large portion of the wealthy and populous county of Ulster lying in the vicinity of the route. And it is not unworthy of notice that the progress in population of that important division of the State, and especially in that section lying between the Delaware river and lake Erie, has been within the last five years more rapid than in any other portion of the State of equal extent. The tide of emigration, which for twenty years had swept by them, seems now, in spite of unequal legislation, to be turning into those secluded counties, demonstrating how unounded are the prejudices which would deny to this wide spread portion of our territory the capability of sustaining a prosperous and increasing population.

Adjacent to the tier of counties thus traversed by the line of the road, lies that flourishing inland district, embracing the populous counties of Otsego, Chenango and Cortland, situated midway between the route of the Erie canal and that of the Erie railroad, and occupying the lands around the head waters of the Susquehanna. And to those who may have been led to believe that the district traversed by the Erie railroad lies in a high, cold and mountainous region, it will be useful to state, that the average level above the tide of the three counties last mentioned lies several hundred feet higher than the average level of the road. Proceeding westwardly, the route approaches the immediate vicinity of the counties of Tompkins, Yates and Livingston.

The population of the extensive district embraced in these six intermediate counties, now amounts to 206,206 inhabitants; and it will not be deemed extravagant to estimate, that at least one half of this number will contribute to the business and revenue of the road. It may also be reasonably expected, that during that portion of the year when canal navigation is closed, considerable portions of the counties of Cayuga, Seneca, Ontario and Genesee, will seek facilities of intercourse with the seaboard by resorting to this channel of communication.

It will further be observed, that the line of the road, which is generally from 80 to 100 miles south of the Erie canal, frequently approaches very near to the eight northern counties of the State of Pennsylvania, comprising an extensive district, which has hitherto suffered like the southern counties of this State, from their difficulty of access to market; but which now exhibit, by their recent and rapid progress in population, the effects of the expanded system of improvements of that State. There can be no doubt, but that this portion of territory, animated in its industry by the expenditures incurred in the construction of the public works of that commonwealth, will, in common with the adjacent counties of our own State, make rapid strides in the development of its resources and the increase of its population; and that the inhabitants of those eight northern counties of Pennsylvania, now exceeding 100,000, will, within ten years, be more than doubled in number.

Without, however, indulging in any anticipations of the immediate increase in wealth and population, which must inevitably follow the disbursement of \$6,000,000 in the construction of the work, the population of the districts, which will at once contribute to the business and revenue of the road, may be estimated as follows:

In the 10 southern counties of this State, as above stated, 293,408
In the 6 middle counties, (one half,) 103,103
In the 8 northern counties of Pennsylvania, 100,000

Total, 496,511

The pursuits of this population are mostly agricultural. They send to the seaboard the products of their fields and forests, and receive, in exchange, the various fabrics and materials comprised under the general term, "merchandise." As a general rule, the consumption of merchandize, (as the term is here explained,) by any given population capable of exporting products, is in the ratio of at least 25,000 tons to every 500,000 inhabitants; and the products (or exports) by which this merchan-

dize shall be purchased, on account of their superior weight in proportion to their value, will constitute a tonnage of at least 4 to 1, in comparison with that of the imported articles.

The imports, therefore, of the great communities included in the foregoing estimate, now numbering 496,511 inhabitants, even without allowing for their inevitable and rapid increase during the progress of the work, will not be less than

| | |
|----------------------------------|------------------|
| Imports, | 25,000 tons. |
| And their corresponding exports, | 100,000 " |
| Total, | 125,000 " |

It will be apparent, that this chain of communication, connected, as it will be, on the one hand by the Chenango Canal, the Ithaca & Owego Railroad, and other lateral communications now in contemplation, with the salt, lime, and plaster districts of our State; and on the other, by the public and private works now in active progress in the northern counties of Pennsylvania, with the anthracite and bituminous coal, and the iron of that great mineral region, will secure and accelerate a vast amount of commerce along the middle division of its line, peculiarly internal in its character—contributing, at the same time, to unite in harmonious connexion the two great canal and railroad sections of our State, and affording to both the means of beneficial and profitable intercourse.

The amount of this interior transportation, not connected with the seaboard, and to be conducted upon the gentle grades, fortunately presented on the very divisions of the road where these bulky articles will need to be conveyed, may safely be estimated at not less than 50,000 tons. Making, with the preceding items, an aggregate of 175,000 tons.

When it is considered that the total tonnage last year of the Erie Canal exceeded 600,000 tons, it will be admitted that the above estimate of 175,000 tons is by no means extravagant. Indeed, the committee deem it much within the limits of truth; and in proof thereof, refer to the fact, that the transportation last year on the Baltimore & Ohio Railroad, reaching only 82 miles into the interior, and extending the means of transportation to a population not exceeding 150,000 in number, amounted to 72,634 tons.

But the most striking feature, in illustration of this part of the subject, remains to be presented. It is one to which the committee have already adverted, but which they feel justified in presenting more at large, under a deep conviction of its magnitude and importance, not only in respect to the pecuniary revenue of this great work, but also to its effects upon the commerce of our State and its metropolis, with the vast communities lying beyond our western borders, and rapidly peopling the great valley of the Mississippi. The committee allude to the Allegheny river; and they cannot but wonder, that public attention should not have been sooner attracted to the commercial importance of that valuable stream, as a channel through which to control the immense trade of that portion of the west watered by the Ohio and its tributaries.

During this investigation, the committee have become fully satisfied that in the Allegheny river the State of New York possesses a source of internal navigation unequalled during its continuance for cheapness, security and expedition; that its waters, gathered among its sources in Pennsylvania, become swelled by the various branches it receives within our limits to a deep, smooth and capacious river, flowing over a pebbled bottom, unobstructed by rocks or sand bars, with a swift, though uniform descent from our State line 192 miles to the great western emporium of Pittsburgh; that the navigation of this stream remains open frequently into mid-winter, and during this present year was not closed until after the 20th of January; that it invariably opens within the first ten days of March, and often before that time, and always remains open and perfectly available for the purpose of descending navigation for at least six, and frequently for ten or twelve weeks in the spring; and, finally, that merchandize placed on its banks may be delivered in the warehouses of Pittsburgh in three days from the State line, and at an expense not exceeding fifteen cents per hundred pounds.

It must be apparent how important it is to this State, and particularly to the merchants of our commercial metropolis, to have this navigation, aptly termed by our neighbors of Pennsylvania "the key of the Mississippi," placed within their control. Opening as it does into the immense basin drained by that mighty river, it will enable our own metro-

polis to pour through its deep, safe and rapid channel in the early spring, the supplies for a population already exceeding three millions of human beings.

It is indeed difficult to fix bounds to the pecuniary value of such an avenue of trade, augmenting, as it must to a vast extent, the commerce and riches of our capital. It may, however, be safely computed, that of the 150,000 tons of merchandize annually sent from the different points on the seaboard into the great valley of the Ohio, at least 30,000 tons will find its way through this expeditious, cheap and early channel of conveyance.

It is also fortunate, that in the vicinity of the Allegheny river, nature, in lavishing her bounties upon our favorite State, has placed the finest, the most extensive and valuable supply of pine lumber existing in the United States. This will afford the locomotive machinery and vehicles employed in transporting the merchandize from the city of New York to the banks of this river, a constant, steady and profitable trade, equal in amount to the ascending tonnage.

How far the connexion of the road with the waters of Lake Erie, most important in many points of view, will contribute to its sources of revenue, the committee will not now undertake to estimate. They will refer but to one other source, too considerable in its amount to be omitted. When the speed and facilities of travel which railroads afford are considered, together with the interesting fact that by this route passengers may travel from the seaboard to Lake Erie in forty hours, and when the several links in the great chain of communication now constructing in the western States shall be completed, from Lake Erie to the Gulf of Mexico in four days, and from New York to New Orleans in six days, there can be no doubt that this road will become an immense thoroughfare for the transportation of passengers. It will be difficult to anticipate the number of persons who will annually be conveyed upon it, or the revenue to be derived from this source of income. If, however, it be true, as asserted, that 200,000 persons annually pass by the present modes of conveyance between Albany and Utica, we have some data upon which to found an estimate, and it is not unreasonable to compute that 100,000 persons will annually pass over this great avenue of intercourse when it shall be completed.

But it was not the design of the committee to present a general detail of estimates, or of the sources of revenue. They have embraced, to a greater extent than they originally intended, those prominent facts and features which seemed requisite to guide their own conclusions, and to lead the Senate to examine this interesting and important branch of the subject. And they now present, with full confidence that it will fall short of, rather than exceed, the results to be ascertained by experience, the following summary estimate of the revenue of the road, derived from the foregoing data:

| | |
|---|--------------------|
| Nett profit arising from the transportation of 25,000 tons of merchandize sent into the interior from the seaboard, at \$4 per ton, | \$100,000 |
| — of 100,000 tons of products sent to the seaboard in return, at \$2.50 per ton, | 250,000 |
| — of 50,000 tons of interior transportation on the middle sections of the line, at \$1 per ton, | 50,000 |
| — of 30,000 tons of merchandize sent to the Allegheny river, for exportation down the Ohio valley, at \$8 per ton, | 240,000 |
| — 30,000 tons of lumber, &c., in return, at \$4 per ton, | 120,000 |
| — of 100,000 passengers, at \$3 each, | 300,000 |
| Total, | \$1,060,000 |

The above sums are estimated as the clear profits of transportation, after deducting the current expenses, including the wear and tear and repairs of vehicles. The cost of repairing the railroad itself will vary from \$250 to \$300 per mile for each track. If the single track only is laid down, the amount at \$300, for 460 miles, (to which length the road has been reduced by recent improvements in the line,) will be

| | |
|---------------------------|-----------|
| Leaving a nett revenue of | \$922,000 |
|---------------------------|-----------|

But if an additional track is constructed, (as it is not improbable the increase of business may require within five years,) then the expense of repairs will be increased \$138,000 annually, but will be met by a corresponding increase of revenue.

And when it is considered that the nett revenue of the Erie canal, open only seven months in the year, and affording no facilities for the rapid conveyance of passengers, amounts to more than a million of dollars, and that the profits earned by the 10,000 persons engaged thereon in transportation, cannot be less than an additional sum of \$500,000 annually, it will not be deemed unreasonable to conclude that the Erie railroad, when completed from the ocean to the great western waters, open and available with but few days of interruption throughout the whole year, will yield the nett revenue of \$922,000, above stated. If so, it must afford adequate security to the State, for the proposed loan of credit, to the full extent.

Nor is the security of the proposed loan dependent upon the completion of the entire road. The bill is strongly precautionary, in its provisions. It authorizes the issuing of two millions of the State stock, in amounts proportioned to sections of the road which are required first to be finished; and with the judable and double purpose of securing the State from loss, and ensuring the ultimate and speedy completion of this great and beneficial improvement.

It provides,

1. That \$600,000 of the stock shall be issued to the company, when it shall have constructed a single railway from the Delaware and Hudson canal to the intersection of the Chenango canal, (near the village of Binghamton,) a distance of 146 miles, and requiring an expenditure, according to the estimate of the engineers, of \$1,646,826.

2. That the amount of \$700,000 shall be thus issued, when a section is finished in the same manner, from Binghamton to the Allegheny river, a distance of 181 miles, and requiring a further expenditure of \$1,322,982.

3. That the amount of \$300,000 shall be thus issued, when a section shall be finished in like manner from the Allegheny river to Lake Erie, a distance of 79 miles, and requiring a further expenditure of \$640,547.

4. That the amount of \$400,000 shall be thus issued, when a section shall in like manner be finished from the Hudson river in Rockland county, to the Delaware and Hudson canal, a distance of 77 miles, as the route of the road runs, and requiring a further expenditure of \$1,064,156.

[These several items of expenditures, amounting in the aggregate to \$4,674,513, are independent of the sums of \$300,000 for engineering and expenses, \$500,000 for cost of vehicles and apparatus, and of \$525,482 added for contingencies, which, with the items above stated, make the entire cost of the road, with a single track complete, (and graduated for a double track,) including vehicles and other necessary apparatus, \$6,000,000.]

And, 5. That a single track being thus completed for the whole distance, and two millions of stock issued, the remaining amount of \$1,000,000 shall not be advanced until a double track shall be constructed from the Hudson river to Lake Erie, requiring, by the same estimate, a further expenditure of \$1,857,000.

The first division above stated commences at a point about 35 miles west from the village of Newburgh, on the Hudson river. It traverses the valley of the Delaware, reaches the valley of the Susquehanna near where that river emerges from the wealthy, populous and productive county of Otsego, a short distance below the mouth of the Unadilla, down the valley of which the contemplated Utica and Susquehanna railroad will pass, and intersects the valley of the Chenango and the Chenango canal, at the flourishing village of Binghamton. Connected at one extreme with the Hudson and Delaware canal—passing through a territory productive in many articles of agriculture, and the vast resources of which in the productions of the forest furnish so important an item of tonnage, and the country that produces which consumes a greater amount of merchandize in proportion to its population than a purely agricultural district,—your committee cannot doubt,—they will not so depreciate the enterprise and resources of that section of the State, as to doubt, that a railroad passing through such a district for a distance of one hundred and forty miles, will yield a revenue sufficient to pay the interest at the rate of 4 1-2 per cent. per annum, upon \$600,000, (which is \$27,000;) or that an expenditure of one million six hundred and forty thousand dollars in the construction of such road, would not be adequate security for the ultimate repayment of that amount.

The second division above stated, commencing at Binghamton, extends the road from the Hudson and Delaware canal to the Allegany, the importance of which point, both as respects its commercial advantages and the question of revenue, your committee has heretofore endeavored to illustrate. If their views and estimates in reference to this point of communication, and the intermediate territories, are correct, nothing more need be advanced by them upon this branch of the subject. The other divisions comprise the two extremes, complete the great chain of communication, and secure the important results which the committee believe must flow from the consummation of this great work.

They will remark, however, that many short railroads, and short sections of extensive works, have within themselves proved productive. The section of 33 miles of the *Baltimore and Ohio* railroad which was then completed, produced last year a net revenue of \$108,000. The *Boston and Worcester* railroad, which is 40 miles in length, produced a net revenue of \$95,000. The *Philadelphia and Columbia* railroad, 80 miles in length, commencing at the same time with the Schuylkill and Union canal, and good turnpike roads, produced a net revenue of \$97,000. And the *Ithaca and Owego* railroad, 29 miles in length, which will intersect with the New York and Erie railroad at Owego, under all the disadvantages of its unfinished condition, produced the first year a net income more than sufficient to pay the interest upon any proportion of the proposed loan which would rest upon any section of the same miles in length of the New York and Erie railroad.

In every point of view, therefore, whether the work be considered as a whole or in detail, it cannot fail of being adequate security for the amount for which the bill provides that the State, by the loan of its credit, shall become responsible.

But it may be asked, if the anticipations of revenue from this work are well founded, why is the aid of the State required for its construction? Why do not capitalists subscribe for the stock, and prosecute the work as a profitable investment? The answer is this: Wealth is so equally diffused in this country that few possess a large surplus capital, and a project involving an expenditure of 6,000,000 of dollars is well calculated to cause men of moderate resources to hesitate. The field of enterprise is far more ample than the means to improve it; and objects of investment well known, and proved by experience to be profitable and safe, are continually presenting, sufficient to absorb all the surplus wealth of the country. No work of internal improvement of magnitude has been prosecuted in this country by individuals or incorporated companies, without the aid of the General or State Governments. To undertakings of this description, Congress has authorized subscriptions, and extensive tracts of the public lands, the common property of the people, and large sums from the national treasury have been appropriated to aid the construction of roads and canals in the western States and territories. But the bounties thus dispensed have been four-fold returned to the treasury, by the increased wealth and population of those territories, requiring vast amounts of foreign merchandize, upon which import duties were collected, and by the enhanced value imparted to the public domains.

The State of Maryland has loaned the public credit to the Chesapeake and Ohio canal company to the amount of two millions of dollars, and to the Susquehanna railroad company for one million of dollars. The State of Virginia, by large loans and subscriptions to various canal and railroad companies, has contributed efficiently to the prosecution of works of internal improvement within her territory.

But this policy is by no means a new one, in the history of the legislation of this State; nor do your committee deem themselves called upon to defend its propriety, when applied to objects of unquestionable utility. The loan to the Hudson and Delaware canal company forms the only precedent worthy of consideration. The distinguished citizen who then presided over the fiscal department, and who is the present able and patriotic Governor of the State, in a favorable report relative to the security for that loan, submitted to the Legislature January 27th, 1829, after observing that individuals of much private worth had embarked their fortunes in that great enterprise, and were struggling with their last difficulties, remarks: "The Comptroller would be extremely unwilling, by an exercise of caution, to increase, if his reserve could increase, these difficulties, or delay the completion of

a work, which, if advantageous to the spirited individuals embarked in it, must be so to a portion of the citizens of this State who have not exposed themselves like these individuals to the hazards of the undertaking. On the other hand, his duty to the State urges him to great circumspection in giving encouragement, by speculative opinions, to the investments of its funds, or the assumption of burdens upon expectations that are not likely to be fully realized. While he would be solicitous to guard the State from hazard and ultimate loss, by lending its money to unpromising adventures, he would be willing to see it seconding individual efforts in undertakings that improve the condition of any portion of its citizens, and exalt its character for public spirit and hardy enterprise." (*Assembly Jour. 52d sess. 1829, p. 216.*)

With these enlarged and liberal views, your committee fully concur. They are applicable to the case before them; but without intending to disparage the work to which these views were applied, which has been and must continue to be one of much commercial utility, they cannot forego the suggestion, how infinitely more important, in a public point of view, is that extensive undertaking for which a similar act of recognition and encouragement is now solicited.

The measure proposed imparts to this great enterprise, and deservedly, a public character. It makes the credit of the State the credit of the company. It ensures for it the confidence of foreign capitalists. It stimulates the doubling or slumbering energies of our own enterprising citizens; and thus, without the advance or the hazard of a dollar of the public money, secures its final and speedy completion.

Deeply impressed, therefore with the correctness of these views, and the importance of the object—believing it to be in conformity with the just expectations of a large and respectable portion of the citizens of this State, and without hazard of pecuniary loss to its treasury—consistent with that equitable and enlightened public policy for which the State has heretofore been distinguished, and with that comprehensive regard for the public good which his excellency the Governor so properly inculcates, the committee respectfully recommend the passage of the bill.

STATEMENT OF THE RECEIPTS AND DISBURSEMENTS OF THE BALTIMORE AND OHIO RAILROAD COMPANY.

Baltimore, Feb. 15, 1836.

To SAMUEL SMITH, Esq., Mayor:

Sir,—The undersigned beg leave to hand you a communication received by them from Philip E. Thomas, Esq., President of the Baltimore and Ohio Railroad Company, accompanied by two statements; the one giving a detailed account of the receipts and disbursements of the Baltimore and Ohio Railroad Company, and the other a similar exposition of the Branch to Washington City, from the organization of both up to the first of January, 1836.

Believing, as intimated by Mr. Thomas, that "a clear exhibit of the pecuniary concerns of the Company" would be satisfactory to the Mayor and City Councils, we most respectfully submit the same to your and their consideration.

Respectfully, your ob't serv'ts,

JOHN KETTLEWELL,
REZIN WIGHT,

City Directors in the B. & O. R. Co.

Baltimore, Feb. 10, 1836.

Gentlemen,—Presuming it might be satisfactory to you, as representatives of the City of Baltimore, in the direction of the Baltimore and Ohio Railroad Company, to be able to lay before the Mayor and City Council, a clear exhibit of the pecuniary concerns of the Company, I take leave respectfully to hand you a statement of all the monies received, and all the disbursements made, by it, from the time of its or-

ganization to the end of the last quarter, terminating on the 31st December, 1835.

Upon reference to the original estimate for the branch Railway to Washington, and which will be found in the 6th Annual Report of the President and Directors, it will be perceived that the cost of the road was estimated at \$1,555,529 47. Circumstances, however, having delayed the commencement of the work for one year, the time was employed in making more minute and extended surveys, which resulted in a considerable modification of the location as it had first been proposed, and a new estimate of the cost, based on the improved line, was submitted in the year 1833, amounting, as will be seen on reference to the 7th Annual Report of the President and Directors, to the sum of \$1,459,996 38. Upon this estimate its actual construction was then undertaken.

The road was finished, with a single set of tracks the entire distance, within less than two years from the time of its commencement, and with two sets of tracks through; all the deep cuts, embracing about five and a half miles, leaving about twenty-four and a half miles of the second track yet to be laid; when that is done, the entire work will be completed as originally projected. The cost of the road for graduation and masonry, and constructing the rail tracks as far as they have been laid, including all materials, is \$1,228,821 43, and it is estimated that the additional tracks to be laid on the twenty-four and a half miles, as above stated, will be \$174,499 43, making the entire cost of the road for graduation and masonry, and laying the rails, \$1,403,321 36, being less than the estimate upon which it was undertaken, \$56,575 02, notwithstanding the tracks are extended into the city of Washington, beyond the point for which the estimate was made, and the Company were also burthened with the additional cost of numerous and extensive landlips, which have precipitated many thousand cubic yards of earth into the roadway, throughout several of the deep cuts along the line, and notwithstanding also the serious interruption to which the work was unhappily exposed, by the repeated riots on the road, which greatly retarded its progress, and involved extraordinary expenses to the amount of several thousand dollars. At the same time I may add, it is universally conceded, that this road has been constructed in as substantial, permanent, and efficient a manner, as any railroad in the United States; and the travel on it has never, in any condition of the weather, or other circumstances, been suspended a single trip since the day it was opened.

Although it will be perceived the operations and business upon the main line of the Baltimore and Ohio Railroad have been steadily increasing every year since the opening of that road, yet hitherto no adequate indication has been afforded of what would be the results of the work were it completed to the points originally contemplated. No one acquainted with the vast commerce and travel that will pass over the road when it shall reach the Ohio, and become connected, as it then would be, with the trade of that river, and the numerous Railroads and Canal communication already projected, or in actual progress, ramifying in every direction, and connecting themselves with the Northern Lakes and the immense regions lying to the west and south of those waters, can doubt that while this road would at once become the channel of perhaps the greatest inland

commerce in the world, it would realise a liberal profit upon the capital invested, and annually bring millions of wealth into our city.

Assuring you of my sincere esteem, I am, very respectfully, your friend,

PHILIP E. THOMAS,

Prest. Balt. and Ohio Railroad Co.

To John Kettlewell and Rezin Wight,
Esqs., Directors, &c. &c.

EXHIBIT

Of the entire receipts and disbursements (appertaining to the capital and construction of the Road) of the Baltimore and Ohio Railroad Company, from its first organization up to the 1st of January, 1836.

The Company have received
\$75 per share on 4000 shares
of stock, . . . \$3,000,000 00
\$25 additional on 2 shares paid
in full, . . . 50 00

\$3,000,050 00

The Company have further received \$25 additional per share in full on 10,000 shares, owned half by the State and half by the city, and advanced to the Company at 5 per cent. per annum, interest, . . . 250,000 00

Total amount of capital paid in, . . . 3,250,050 00

The Company have borrowed, at 6 per cent. interest, . . . 1,000,000 00

Of which they have invested in 9,333 shares of the Washington Branch Railroad stock, . . . 938,800 00

61,200 00

And applied the balance to the general purposes of the Company—making a total of . . . 3,311,250 00

Which has been expended as follows, viz:

For graduation, including the \$266,000, paid in the compromise with the Chesapeake and Ohio Canal Company, . . . 1,234,952 93
For masonry, . . . 342,682 84

1,577,635 77

For expense of laying railway tracks, including the costs of the materials, . . . 944,705 20

For right of way and damages, . . . 107,073 14

For reconnoissances of the entire country from Baltimore to the Ohio river, and extending from the waters of the Tonghogany to the great Kenhawa, including surveys and instruments, . . . 65,974 62

For contingent expenses, viz: for obtaining the charters in Maryland, Virginia, and Pennsylvania; obtaining subscriptions to the stock, and organizing the Company; of various committees to Annapolis, Washington, &c.; mission to England; office expenses, salaries, advertising, printing, &c. &c. . . 86,166 79

For law expenses, including fees of counsel, . . . 34,048 46
Real estate and construction of depots, . . . 203,150 01
Locomotive steam power, . . . 19,468 45
Passenger cars, (about 52,) . . . 94,244 92
Burden cars, (1,033,) . . . 165,202 62
Horses, mules, and harness, . . . 46,985 78

Total expended on items, appertaining to capital, . . . 3,284,655 76

Besides the above, the Company have paid at different times a large amount of interest, of which there still remained on the 1st October, 1835, to be returned out of the revenue, the sum of . . . 43,115 14
Deduct amount since expended on account of construction, and taken out of revenue, . . . 16,520 90

26,594 24

3,311,250 00

Errors excepted.

Office of the Baltimore and Ohio Railroad Company, 1st Jan., 1836.

J. J. ATKINSON, Secretary.

Second—As to the Revenue of the Company.

The gross amount received during the year ending 1st October, 1832, . . . \$183,053 21
1833, . . . 191,678 35
1834, . . . 222,973 92
1835, . . . 263,368 10

Quarter ending 1st Jan., 1836, . . . 72,163 62

933,237 20

The expenses of transportation during the same period were, for the year 1832, . . . \$98,753 01

1833, . . . 83,880 75

1834, . . . 95,344 78

1835, . . . 103,179 50

Quarter ending 1st Jan., 1836, . . . 36,044 60

422,102 64

Received on account of stock forfeited, . . . 560 25

511,134 56

Giving an amount of \$511,694 81 revenue, which has been appropriated as follows, viz: To the payment of interest, . . . 117,553 36
Repairs of railroad and machinery, . . . 116,795 16
Towards providing for the wear and tear, depreciation and renewal of locomotives, cars and horses, . . . 129,251 16
To pay dividends, . . . 144,138 23

To pay office expenses and salaries, . . . 964 61
To repay old interest, . . . 16,520 60
In the hands of the disbursing officers, . . . 4,296 03

520,529 45

Balance of cash account for money over expended, . . . 17,824 64

511,694 81

Errors excepted.

Office of the Baltimore and Ohio Railroad Company, 1st Jan., 1836.

J. J. ATKINSON, Secretary.

EXHIBIT

Of the entire receipts and disbursements (appertaining to the capital and construction of the Road) of the Washington Branch of the Baltimore and Ohio Railroad, from its commencement to the 1st January, 1836.

The Company have received
\$100 per share on 15,000
shares of stock, . . . \$1,500,000 00

Which has been expended as follows, viz:

For graduation, . . . \$684,499 90
masonry, . . . 237,389 26

\$921,889 16

For expense of laying the railway tracks, including cost of all materials, . . . 256,932 27

1,228,821 43

For right of way and damage, surveys, . . . 94,283 47
30,979 56

Contingent expenses, viz:

For obtaining the charter; various committees to Annapolis and Washington; office expenses, including salaries, advertising, printing, &c. . . 7,165 41

Law expenses, including fees of counsel, . . . 2,405 00

Real estate and construction of depots, . . . 33,021 52

Locomotive steam power, . . . 18,428 54

Passenger cars, . . . 33,167 25

Burden cars, . . . 11,620 00

Making a total of . . . \$1,460,092 28

Unexpended on account of capital, . . . 39,907 82

\$1,500,000 00

Errors excepted.

Office of the Baltimore and Ohio Railroad Company, 1st Jan., 1836.

J. J. ATKINSON, Secretary.

Second—As to the Revenue.

The Company have received . . . \$64,676 47

Less State tax, . . . \$12,836 52

— amount credited the Baltimore and Ohio Railroad Company for the use of 8 miles of their road, . . . 11,823 50

24,690 02

Deduct expenses of transportation, . . . 39,986 45

11,987 23

27,999 22

Giving an amount of revenue of \$27,999 22, which will have to be appropriated as follows, viz:

To the payment of interest, . . . 16,482 69

Repairs of the road and machinery, . . . 10,500 61

Pay office expenses and salaries, . . . 718 46

27,701 75

Leaving a balance on hand of . . . 297 47

27,999 22

Amount in the hands of disbursing officers, . . . 21,190 06

Balance of cash in hand, 18,717 76
 89,097 82

Errors excepted.

Office of the Baltimore and Ohio Railroad Company, 1st Jan., 1886.

J. J. ATKINSON, Secretary.

RAILROAD AND CANAL INTELLIGENCE.

NEW-ENGLAND.

WORCESTER RAILROAD.—The petition for a Railroad from Worcester to Hartford, presented to the Legislature of Massachusetts, has been referred to the next session by the House of Representatives.

NEW-YORK.

UTICA AND SCHENECTADY RAILROAD.—The grading of this road is now very nearly completed; the culverts and stone work are finished, and the bridges in so great a state of forwardness, that they will be in readiness for the reception of the rails by the first of May. The superstructure, including the rail plates, for a distance of 15 miles, was perfected before the commencement of winter, and arrangements have been made to recommence laying the rails at an early period in the spring, and in a manner so vigorous as to insure the opening of the road throughout the whole line early in August next. Eight engines, from the best factory in the country, have been ordered; and from the immense travel which is fairly to be anticipated, we have no doubt they will have ample employment. Indeed such a thoroughfare is no where else to be found in the Union; and what is still more extraordinary, it is placed by the formation of the country almost beyond the reach of competition.

It is proposed by some to terminate the Erie Canal below the Overslaugh.

PENNSYLVANIA.

READING AND BRANDYWINE RAILROAD.—The Commissioners of this Road offer the stock to the public. From their circular we obtain the following information:—

The Reading and Brandywine Railroad is intended to connect the Schuylkill navigation, at the borough of Reading, with the Pennsylvania Railroad at Downingtown, a distance of 33½ miles. One half of the Road will traverse the valley of the Brandywine. Several intersections will be formed with the various contemplated improvements.

VIRGINIA.

The Legislature have granted an appropriation for the relief of the Rappahannock Canal Company.

WINCHESTER AND POTOMAC RAILROAD.—The following rates of travel and transportation, on the above Railroad, have been established by the Board of Directors, and are made public, in the Winchester papers, for the satisfaction of those likely to

use the road, in either way. We are gratified to observe that this Railroad, destined to be an important link in connection with our Baltimore and Ohio Railroad, will be opened for use during the present month.

Transportation on the Winchester and Potomac Railroad.

The President and Directors of the Company have established the following rates of travel and transportation between Winchester and Harper's Ferry:

Fare through, with a reasonable allowance of baggage, for passengers set down or taken up at the depot of the Island of Virginus, near the Potomac, \$1 50
 For any intermediate distance, per mile, 6

Downward Trade.

Toll for transportation from the depot at Winchester, and delivery at the end of Wager's Bridge, on the Maryland side of the Potomac, for flour, per bbl. \$0 18
 Wheat, per bushel, 5
 Corn and corn meal, rye and rye meal, per bushel, 4½
 Oats, 3
 Bar iron, blooms, pig iron and castings, per ton, 1 80
 All other commodities, per ton, per mile, 6

Transportation to and from any intermediate depots, the same proportional rates with the above.

Ascending Trade.

Transportation from the place on the Maryland side of the Potomac above mentioned, to Winchester.

For plaister, per ton, \$1 75
 Salt, per bushel, 5
 Fish, per barrel, 30
 Merchandise, and all other commodities, per hundred pounds, 11

And to and from any intermediate depots, the same proportionate rates.

The above rates include all charges incident to transportation, to and from other companies. There will be a small additional charge made at the different depots, for receiving and forwarding—about 2 cts on a barrel of flour, and a similar rate for other commodities. By order of the Board.

JOHN BRUCE, President.

It is expected that the road will be ready for transportation early in March. J. B.

MISSISSIPPI.

The Mobile and Jackson Railroad bill has passed both branches of the Legislature of Mississippi. It has not yet received the signature of the Executive, of whose sanction there is no doubt. It has banking privileges, with a capital of \$4,000,000. On the utility and vast importance of this road, it would be idle to descant. Alabama can not fail to pass the charter in her Legislature, and to lend the undertaking efficient support.—[Mobile Chron. 16th Inst.]

NEW-ORLEANS AND NASHVILLE RAILROAD.—The Mississippi Legislature have passed an amendment to the charter of this important road, requiring the company to run the track east of Pearl river, crossing at Pearlinton, and continuing in that direction to Noxubee county.

FLORIDA.

A charter for a Railroad from St. Augus-

tine to the St John's river, was granted by the Legislative council of Florida.

LOUISIANA.

We are informed that the whole of the stock for the Atcha alaya Railroad and Banking Co. has been taken this morning, and that it already commands a premium. Bank stocks are commencing to look up, now that the probabilities are that our affairs with France will be amicably arranged.—[N. Orleans Union.]

ILLINOIS.

The Illinois Central Railroad Company has recently organized and elected the following gentlemen Directors: Hon. A. M. Jenkins, Hon. S. Breese, Col. Pierre Menard, D. J. Baker, Esq., and D. B. Holbrook.

ALTON AND SHAWNEETOWN RAILROAD.

—Meetings have been held at Shawneetown, approving of the location of this Road through Equality, Frankfort, Nashville, Lebanon, and Edwardsville, and recommend the commencement of the survey as soon as the season will permit.

We give the following as a specimen of the many calculations to be found in the Baltimore papers—all showing the great advantages of the location of Baltimore compared with that of New-York!

In a recent Baltimore paper, a writer exclaims, "What would New-York not give for the advantageous situation of Baltimore?"

BALTIMORE AND OHIO RAILROAD.—We have before us a very interesting map designed to show the connection between the Baltimore and Ohio Railroad and other Railroads executed or in progress throughout the United States.

No one can study this map with any degree of attention without being struck with the great advantages of the position of the city of Baltimore. Amongst those advantages may be enumerated, as is done on the margin of the map, the following:

1. That Baltimore is nearer to Pittsburg and Wheeling, the two cities which approach closest to the Atlantic seaboard, west of the mountains, than either Philadelphia or New-York.

2. That the readiest route from Wheeling and Pittsburg to Philadelphia and New-York will be through Baltimore, when the Baltimore and Ohio Railroad shall be completed.

3. That the route from Maumee Bay to Baltimore, by a Railroad already authorised in Ohio, and intersecting the great Erie and Ohio Canal, and the Mad River and Lake Erie Railroad, is shorter and more direct than the routes either to New-York or Philadelphia. The route to New-York being a part of it on Lake Erie, a part of it on the Erie Canal, or on the Erie Railroad, when that shall have been completed, and a part on the Hudson River. The route from Maumee Bay to Philadelphia, being part by Railroad and part by Canal, or part by Lake Erie, part by Canal and part by Railroad, while on the other hand, the route from Baltimore to Maumee Bay will be an unbroken line of Railroad.

4. That therefore the best route to Maumee Bay to Philadelphia or New-York will be through Baltimore.

5. That the extension of the same line of road will afford the most direct communication between Galena and the Atlantic seaboard, the travelling for Philadelphia and New-York passing in like manner through Baltimore.

6. That the extension of the Railroad system from Harper's Ferry along the valley of Virginia involves a connection with the Nashville and New-Orleans Railroad, near the Muscle Shoals of the Tennessee River, in which event Baltimore will be a point through which the entire travel from Boston, New-York and Philadelphia towards New Orleans, must pass. The line of route cannot be laid further south, on account of the Chesapeake Bay, nor further north, without encountering the hilly district at whose connection with the alluvial country Baltimore is situated; therefore there is no better line can be laid down than that which passes through Baltimore.

7. That, should the route to New-Orleans be carried along the alluvial country south of Baltimore, by the way of Weldon and Raleigh, it must still pass through Baltimore, using the lateral road to Washington, instead of the main stem of the Baltimore and Ohio Railroad.

8. That the extension of the Railroad along the Valley of Virginia will, by intersecting the James River and Kenawha Railroad, give to Baltimore a direct Railroad communication with the Ohio at Guinandot, where the water is deeper and the river less obstructed by ice than at either Pittsburg or Wheeling.

9. That the extension of the main stem of the Baltimore and Ohio Railroad to Hagerstown, will at once afford a connection with Chambersburgh and the Cumberland Valley.

10. That the prolongation of a Railroad from Pittsburg to Cleveland, which is now proposed, will make the route through Baltimore to the latter place, from Philadelphia and New-York, preferable to any other.

11. That, in fine, the geographical advantages of the position of Baltimore are such that all travel from Boston to New-Orleans, and from Boston, New-York and Philadelphia, to Pittsburg, Wheeling, Sandusky City, Maumee Bay, Detroit, Chicago and Galena, will inevitably, when regard is had to ease, rapidity and comfort of the mode of conveyance, pass through this city, should the Baltimore and Ohio Railroad be completed to Pittsburg and Wheeling.

12. That these advantages are peculiar, because, excepting where the Lakes head the Alleghanies and at the pass near Christiansburg, to the south, no where else but by the Potomac route can the mountain be passed without stationary power.—[Balt Chronicle.]

From the Journal of the Franklin Institute.

REPORT ON THE USE OF THE HOT AIR BLAST IN IRON FURNACES AND FOUNDRIES. BY A. GUENYVEAU, ENGINEER AND PROFESSOR IN THE ROYAL SCHOOL OF MINES.*

(Translated for this Journal by Professor A. D. Baché.†)

This report embraces the observations made during a tour of examination of the furnaces and foundries in the South of France, in some of which the hot air blast is used. The tour was undertaken by or-

der of the director-general of bridges and roads, and of mines.

In remarks upon the subject, a distinction must be made between the furnaces where coal is used and those which use charcoal. The amount of air required is so different in the two classes, being sometimes as two or three to one, that the apparatus for heating it is usually different. The results are, however, nearly the same for both classes. All the furnaces examined use ores from the same part of France. The hot air blast has succeeded best in the furnaces of Vienne (Isere,) the two at Terre-Noire (near St. Etienne,) and those of the Voulte (Ardeche.)

In one furnace, that of Firmy (Aveyron,) the results with this blast were not satisfactory, either with raw coal or with coke. The large establishments of Creusot and Alais, and those of l'Orme (Loire,) have not yet applied heated air. The fuel used in them is coke. At the furnace near Torteron, where the fuel is a mixture of charcoal and coke, the hot air blast has been used to advantage, in regard to the quality of the iron. In the various smelting furnaces in Burgundy and Franche-Comte, where charcoal is used as a fuel, the new process has proved satisfactory.

I. HEATING APPARATUS.

Of these there are various forms in use. The objects sought are economy in heating the air, a sufficiently high temperature, and the preservation of the pipes.—The apparatus used at Calder* (Scotland,) appears to answer the best purpose. It is in use at Vienne, and in one of the Firmy furnaces. The first apparatus put up was like that used at the Clyde† furnaces; this is still used at Torteron and la Voulte, but has, at Vienne, given place to the Calder apparatus. The heating pipes are two inches in diameter, and at Firmy have been replaced by others two and a half inches in diameter. It might seem that these pipes are too small, but experience has sanctioned their use. It is not known how long this apparatus will last; in fact the duration must depend upon the temperature to which the pipes are heated, and upon the nature of the coal. It is believed that the arrangement with highly inclined tubes will outlast those with horizontal ones. The temperature of the air is easily raised above the melting point of lead (604° Fahr.) The cost of the apparatus for each tuyere is about 1200 francs (\$240.)

The flame which appears at the trunnel head of smelting furnaces which use coke, has not been applied to heat the blast, although it has been advantageously applied in charcoal furnaces. It would seem that this mode of heating should apply particularly to furnaces in which raw coal is used, on account of the amount of unconsumed combustible matter which issues from the trunnel head; notwithstanding which, M. Dufrenoy gives one case, in the neighborhood of Birming-

ham,* in which the heating apparatus placed upon the platform of the furnace did not answer the purpose. The temperature of the air could not be raised above 360° Fahr., and subsequently it was heated by a separate furnace which consumed four tons of coal for each ton of iron. As, however, the temperature to which the air is heated at the Voulte furnace is below that just stated, the question cannot be considered as decided.

The air blast is generally heated above melting point of tin (442° Fahr.,) and sometimes above that of lead (604° Fahr.,) and even higher. In other furnaces, as at the Voulte and Torteron, where horizontal heating pipes are used, the temperature has been diminished, in order to save the wear of the pipes. At the first mentioned furnace it never exceeds 340° Fahr., being at a mean about 320°, and at the second never exceeds the melting point of tin. At the furnaces of Terre-Noire the heat is carried by Taylor's‡ apparatus to 572° Fahr. It has been said that the advantages of the hot air blast increase in the ratio of the temperature of the blast, an assertion which, although it appears probable, and has been confirmed by certain observations, is not true in all cases. At the Voulte the results were sensibly the same where the air was heated to 428° and to 320° †

Several methods have been used to determine the temperature of the hot air blast. One was to use a common thermometer, with a metal scale; the bulb being inserted into the blast pipe near the nozzle. Another method was to use a slip of lead, tin, or of some fusible alloy, according to the temperature, which was exposed to the air issuing from the hole in the blast pipe.§ At Torteron the alloy was two-thirds tin to one-third of lead.

Great inconvenience has been felt from the leakage of the pipes used in the heating apparatus. These leaks, when they occur in the heating ovens, are only discovered by a deficiency in the yield of the furnace. They occur commonly at the joints, and the liability to them increases with the increased temperature of the blast. The repairs which are necessary alter the supply of air, and thus derange the system of working.

It is a desideratum to render the leakage less common and the means of repair more easy. When these leaks occur, if the fire is not immediately extinguished, the pipes being no longer kept cool by the air passing through them, burn out very quickly. The heating apparatus placed near the trunnel head is free from this defect.*

The effect of these difficulties has merely been to produce a resort to the reduc-

* See this Journal, vol. xv., p. 272, pl. 3, figs. 15 and 16.

† Similar to that described by M. Dufrenoy, vol. xv. p. 213.

‡ It may readily be understood why an increase of 100° from 320° to 420° should not produce so sensible an effect as from 220° to 320°, or as from 120° to 220°.—[TRANSLATOR.]

§ By reference to this Journal, p. 74, vol. xvi., a more convenient method of using the thermometer will be found.—[TRANSLATOR.]

* If so, it would seem that it must be deficient in heating power.—[TRANSLATOR.]

* Annales des Mines, vol. vii., Livraison 1.

† This is a translation of extracts from the report of M. Guenyveau, and in parts where the details do not seem to be of special interest, an abstract of his results.

* See this Journal, vol. xv., p. 213, pl. 2, figs. 6, 7, 8, and 9.

† Ibid, vol. xv., p. 209, pl. 2, figs. 1 and 2.

tion of temperature noticed at the furnaces of La Voulte and Torteron. The remarks of M. Dufrenoy on the forms of apparatus, confirmed as they are by extensive observation, deserve great attention.

The effects of heating the air upon the quantity and pressure of that passed into the furnace, may be thus estimated. If we suppose the air heated from 60 deg. to 568 deg. Fahr., its bulk will be double, and consequently, under the same pressure, but half the quantity will pass through a given orifice, which would have passed had the air not been heated. Generally, until the area or nozzle of the blast pipe is nearly doubled, the advantage of the hot air blast is not realized. Before this change in the nozzle, the furnace is not duly supplied with air. Besides, the pressure at the tuyere has been observed to diminish with a given pressure at the blowing machine, a fact which may be explained by the resistance of the air moving through the pipes of the heating apparatus, the elbows in which tend to make the resistance quite considerable in amount.

If then the pressure and the quantity of air thrown into the furnace should be the same with the hot and cold blast, the power of the blowing machine must be increased. This has not been found necessary in the English works, where on the contrary they have supplied more furnaces with heated air by the same blowing machine, than could be supplied with cold air. Less fuel being consumed in a given time, with a greater yield of metal, less air is required to support the combustion. In these works the power required to supply heated air is estimated at one-tenth more than that employed for the cold blast, for the same weight of ore, but as the weight of the air thrown in is diminished one-fourth, the same blowing machine which supplied three furnaces with cold air will supply four with the hot blast.

At the Calder furnaces, (Scotland,) the pressure of the hot air blast was less than that of the cold air previously used by two-thirteenths, and at the Clyde works by one-sixth. M. Varin estimates the economy from this source at la Voulte works at one-fifth, the pressure being reduced from three inches and a quarter of mercury to two inches and a half.

At the Torteron furnace where the heated air blast has neither changed sensibly the amount of fuel used, nor of iron produced, the blowing machine requires a little more fuel to produce the steam required to move it, than it did when cold air was used. At Wasseraefingen, where the consumption of charcoal has not varied materially by the change from the cold to the hot air blast, they require more power with the latter, a larger quantity of air being necessary in running the furnace. It is not said that the dimensions of the blast pipe nozzle have been changed. At Ancy-le-Franc, in August, 1834, the pressure at the governor remaining constant, that at the tuyere was observed to fall to one-half, when the air was heated. The size of the nozzle was increased, but there was not an ade-

quate power to supply the air required, and the yield of the furnace diminished.

Tuyeres, cooled by water, have been substituted for the ordinary ones in furnaces using the heated air blast; the cooling effect of the blast being taken away, the ordinary tuyere is rapidly burned out. Cast-iron water tuyeres have been found to last longer than those of wrought iron; they wear out in from three to six months.

In many establishments the blast pipe nozzle is permanently attached to the tuyere, an arrangement which answers well when it is not necessary to clean out the tuyeres. When this is necessary, the common arrangement is to be preferred, and this is generally the case in the French works even where charcoal is used.

When the nozzle is not closely fitted to the tuyere, the blast is slightly cooled, before it gets into the furnace, and part of it does not pass in.

II. ON THE EFFECTS AND ADVANTAGES OF THE HOT AIR BLAST.

The effect appears to be to increase the heat within the furnace, so that a refractory ore is fused; any stoppage in the furnace is prevented, and the working is more readily resumed after the furnace has been cooled. Less fusible ores may be used, less flux is required for their reduction, the slags are more fusible, and become spongy if water is thrown upon them when incandescent. This property has been observed only in the Styrian furnaces and others where charcoal is used as a fuel, and the ore is a manganesian carbonate of iron. Further, grey pig iron is obtained with every kind of ore, this variety of iron requiring a high temperature for its production. Generally the heated air and combustible gases which issue from the trunnel head, are diminished in quantity, and the heat is more concentrated in the lower parts of the furnace; a source of great advantage, but which causes a more rapid destruction of the hearth and boshes.

The working of the furnace when heated air is used is comparatively easy; there are fewer cases of clogging, and they are readily remedied; the tuyeres are almost always free, no slag collecting and hardening about them. Frequently a clogging in the furnace may be removed by raising the temperature of the blast. The advantages may be succinctly enumerated as follows:

1. A change in the iron, which becomes more grey, and even black, and the slag is more fluid than when cold air is used.
2. An increase in the quantity of ore which a given weight of fuel will bear, whence results a diminution in the quantity of fuel required to produce a ton of metal, after the fuel required to heat the air has been taken into account.
3. A diminution in the quantity of flux, to which there are, however, exceptions.
4. An increase in the daily yield of a furnace.

We do not enumerate among the advantages that of using crude coal, because it has been ascertained both in Wales and at Decazeville, that this may be done with the cold air blast.

In regard to the quality of the iron produced by the hot air blast, the following facts have been collected:

It has been asserted that iron, thus obtained, requires to be remelted when it becomes duly tenacious, and yet the Lyonese founders complain that the iron of Vienna is weak. On the other hand, iron from the Torteron furnace was cast into shells which required more powder to burst them than similar ones made from iron procured by the cold blast, the strength having been nearly double, in the former case, of that in the latter.

In England there appears to have been no sensible difference between the castings made from iron obtained by the two different methods.

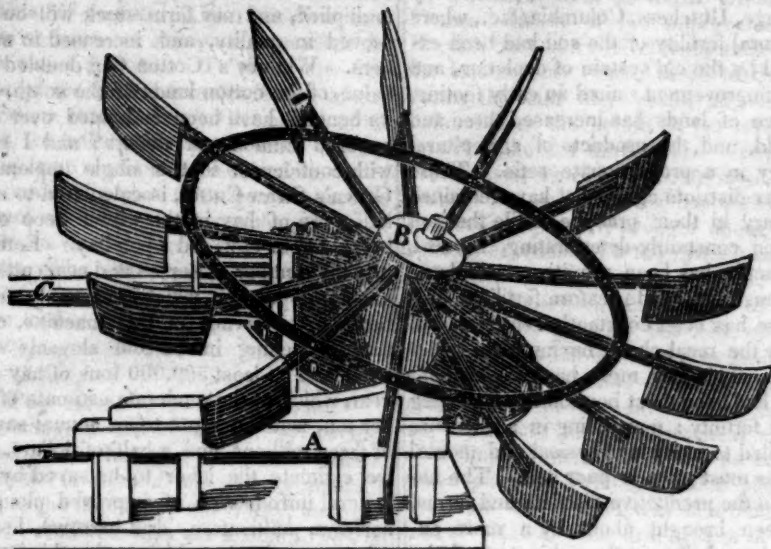
The same uncertainty prevails in regard to the forged iron obtained from pigs reduced by the aid of the hot air blast. M. Dufrenoy and M. Debilly, consider the notions prevalent on this subject in England, to be founded in prejudice. My observations in the South of France have shown that there is, if any, a very slight difference in the quality of the iron in favor of that made by the cold blast. At one of the furnaces it was suggested that silicious ores gave a worse iron by this process than by the cold air blast, the great heat facilitating the union of the silicium with the carbon and iron. A careful analysis is required to demonstrate this theory, in favor of the probability of which it may be stated that at Firmy, where a very silicious ore is used, the iron made by the hot air blast is worse than that by the other process, and when refined, produces a worse malleable iron. It is remarkable, moreover, that the best iron is obtained when the ore is in excess in charging the furnace, in which case the iron is reduced at the lowest temperature.

(To be continued.)

The Erie Gazette states that a specimen of mineral coal, measuring about eleven and a half solid feet, and weighing nine hundred pounds, has been sent to that place from the coal mines of the Shenango, about eighty miles from that place, and on the line of the proposed Canal. The quality is pronounced of the first order, and the quantity inexhaustible. Should this be the case, and the coal can be afforded at a fair price at Erie and elsewhere, it will yield no trifling addition to the means of navigating our lakes by steam.

SLEEPER'S PATENT CORN MILL.—We were gratified yesterday in witnessing the operation of one of these newly invented mills, in the rear of Mr. Sowle's Cabinet Warehouse, Purchase street. It is exceedingly simple in its construction, the grinding being effected by means of three iron cylinders, which are kept rapidly in motion by means of a steam engine of moderate power. We were told that it would easily accomplish the grinding of eight bushels per hour, with the power ordinarily applied.—Mr. Abraham Russel, Jr. is an agent for the sale of these mills in this town and vicinity.—[New Bedford Mercury.]

INCLINED WATER-WHEEL.



We were invited a few days since to examine the model of a water-wheel upon a plan to us entirely new. It was called the "inclined water-wheel," and is in some measure represented by the above cut.

The object of this wheel is, as we were informed by the Patentee, to be used as a tide wheel, or in rapid streams, without the expense of constructing a dam; and one of its great advantages is believed to consist in its peculiar construction, by which it may be used without the expense of erecting a pier in the water to sustain the outer end of the shaft, which is necessary in using the ordinary wheel.

The shaft of this wheel stands at an angle of 15 to 30 degrees, the upper end leaning towards the water, causing the paddles, which are made fast to projecting arms, of ten to

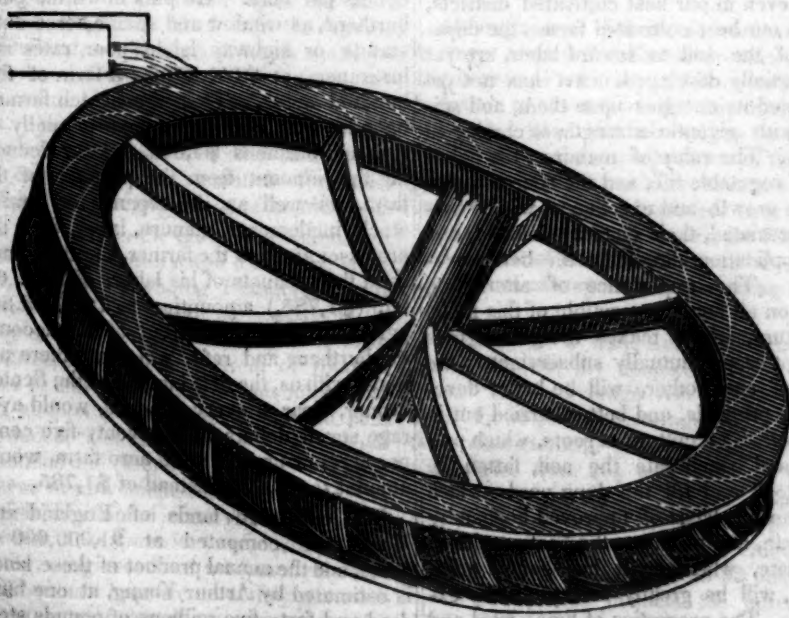
fifteen feet in length, to dip in the water, and the wheel of course turns by the power, and with the velocity of the current.

This wheel, it will be seen, rests entirely upon the bank of the stream, or wharf built out to the current; and it is so constructed that the shaft may be regulated to suit the rise or fall of the stream or tide; or the paddles may be thrown entirely out of water. The gearing and the paddles may be so constructed that the wheel will turn either way, and the wheel is of a size to suit the power and the labor required.

A represents the platform, or frame, on which the shaft B stands, and it may be made permanent, or moveable, as may be desired.

This wheel was invented by Cotton Foss, and Justin Ware, of Madison, Ohio, and Andrew Luke, 352 Broadway, New-York.

INCLINED WHEEL, FOR SMALL STREAMS.



Inclined Wheel for small streams, a substitute for those operated by animal power.

We recently examined, at the rooms of the American Institute, the model of a

wheel, of which the above is a representation, designed as a substitute for the horizontal, or loded wheel, moved by animal power. It is not uncommon, in some parts of the country, to use wheels upon the surface of which horses, mules, or cattle travel, for grinding grain, and for other purposes, for the want of sufficient water power to drive the ordinary wheel.

This wheel is neither horizontal nor perpendicular, but a medium between the two, and the buckets are so constructed as to retain the water until the wheel has completed nearly the half of a revolution. This wheel, the inventor believes, may be used on small streams, wherever two, or three, or more feet fall can be had, with much advantage over any other wheel, as by adopting the inclined position, a much larger wheel, or longer lever, may be used, and therefore a less quantity of water with a trifling fall, may be used to advantage, for many purposes. Its superiority over animal power, consists in its economy, as when it is once prepared it requires neither provender, driver, nor replacing with another, when weary and worn out; and it will be readily perceived that the weight of water required is only equal to the traction of the animal used on the horizontal wheel.

We consider them well worthy the attention of those who desire to use the kind of power for which they are designed as a substitute.

C. Foss & Justin Ware, of Ohio, patentees, and Andrew Luke, of 352 Broadway, agent.

AGRICULTURE, &c.

AGRICULTURAL CONVENTION.—We have at length received the proceedings of the State Agricultural Convention, held at Albany, on the 8th and 9th of February. It was, we are gratified to be able to say, an assemblage of gentlemen which does credit to the State; and from which much good must inevitably result.

We have delayed this number of the Farmer several days, in order to give the proceedings of the Convention, which we are enabled to do through the politeness of Alexander Walsh, Esq., of Lansingburgh, who furnished us with the Cultivator containing them.

The Convention was opened by the appointment of Jesse Buel, Esq., Chairman, who thereupon delivered an eloquent address, in which he inculcates sound maxims and important truths, in relation to the policy and necessity of a higher system of agricultural education. We give the address, proceedings and memorial of the Convention, and ask for them an attentive perusal; believing, as we do fully, that such an education as is here contemplated, in the acquirement of which, a practical knowledge of agriculture and mechanics may also be obtained, will do more to promote the

happiness of mankind, by preparing young men for usefulness, than any other system ever adopted in this country; and we indulge the hope that the Legislature now in session, will, in its wisdom and liberality, make the necessary provision for an Agricultural School, which shall become a *pattern* school for the whole Union. Let New-York, in this equally important measure, as in *Internal Improvements*, take the lead.

We have also the proceedings of the State Agricultural Society, which, however, we are compelled to defer until our next, as our columns, for this number, were crowded before the Cultivator came to hand.

AGRICULTURAL STATE CONVENTION.

At a meeting of delegates and others, from different parts of the State, in agricultural convention assembled, in the assembly chamber in the city of Albany, on Monday, February 8th, at 3 o'clock P. M.

On motion of Mr. Dickinson, of Broome, the Hon. Judge Buel of Albany was temporarily called to the chair, and on motion of Mr. Leland of Steuben, D. L. Dickinson of Broome, and J. J. Viele of Rensselaer, were chosen secretaries.

The chairman then rose and addressed the convention as follows:

Gentlemen,—Land and labor are the principal sources of public and private wealth. The more fertility we can impart to the one, and the more intelligence we can infuse into the other, the greater will be the returns they make, and the greater our means of happiness; for it is wealth, rightly employed, that enables us to multiply not only our own, but the comforts and happiness of those around us. Yet it is not a few very rich men, or very wise men, be the aggregate of wealth and talent ever so great, that give prosperity and greatness to a State. It is the general diffusion, among a whole people, among the rank and file of society, of property and knowledge, and the industry, enterprise and independence which they beget, that renders a State truly respectable and great. If this convention, therefore, can do aught to render labor more profitable and more honorable, and our lands more productive, it will effect a substantial good to society.

I venture to lay down this broad proposition, that the productions of our agricultural labor may be doubled in ten years, and trebled in twenty. In proof of this, I appeal, in the first instance, to facts which have fallen under the observation of all: to the contrast, in products and profits, which are seen to exist, between districts and farms, of equal natural fertility, and often contiguous to each other, which are under good and bad management, and the constantly increasing profits of husbandry, where the spirit of improvement has been fully awakened. We find many individuals who pay from seventy to one hundred dollars an acre for farms, getting not only the interest of their purchase money, but realizing large profits, from their agricultural labors; while we see others, equally well circumstanced, hardly getting enough to meet the contingent

expenses of their families. Within the last thirty years, in many districts, particularly in Orange, Dutchess, Columbia, &c., where the natural fertility of the soil had been exhausted by the old system of depletion, and where improvement gained an early footing, the price of lands has increased three and four fold, and the products of agricultural industry in a proportionate ratio. There are other districts again, that have remained stationary in their practice, while the soil has been constantly deteriorating, because this practice has been primitive, calculated to exhaust, but not to restore fertility. The measure has been constantly sent for meal, without the meal-chest having been replenished. This has most happened where nature had been most bountiful in imparting natural fertility: man being in a measure compelled to exert his physical and mental energies most upon a poor soil. The benefits to the productive districts and farms, have been brought about by a more extended knowledge, in the cultivator, of the principles upon which good husbandry is based, by the force of competition, and examples of individual excellence. The bad husbandry has diminished in products and profits, from the want of this knowledge, from the force of prejudice, the want of a spirit of competition, the want of system, and from culpable indolence, the natural result of the other causes. In what manufacturing or mechanic art, do we see the master prosper, who adheres to the modes and practices of his grand-father? The labor of fabrication has been abridged of one-half of its toil in these, by the discoveries of science and the inventions of genius. Nor is much less the case in agriculture, where science and skill have been pressed into its service. "Why," says a late writer, "this becomes another world to the man who opens his eyes. Science breathes life and light into it; it kindles with glory, happiness and praise; there is no one who cannot feel its inspirations if he will."

But even in our best cultivated districts, and on our best cultivated farms, the capacities of the soil to reward labor, are yet but partially developed. Art has not yet exhausted its energies upon them, and science, with gigantic strength, is coming to its aid. The value of manures, the pabulum of vegetable life, and the source of vegetable growth and excellence, will be better appreciated, their quantity doubled, and their application directed with better economy. The importance of alternating crops, on all lands susceptible of this mode of culture, which makes the grain, grass and root crops mutually subservient to the wants of each other, will be better developed in principle, and better carried out in practice. The culture of roots, which pulverize and ameliorate the soil, fatten the farm-stock and fill the dung-yard—which has been the basis of improved husbandry in Britain, and promises the best results in this State, wherever it has gained a fair footing, will be greatly and profitably extended. The properties of lime, marl and gypsum will be better understood, and these mineral substances will be made to contri-

bute more largely to the productiveness of the soil. Labor-saving implements will be multiplied, and our farm stock will be improved in quality, and increased in numbers. Whitney's Cotton Gin doubled the value of the cotton lands of the south, and its benefits have been estimated over one hundred millions of dollars; and I state with confidence, that a single implement, Green's Straw Cutter, is calculated to save half a ton of hay in the winter keep of a horse, ox, or cow, fed upon hay. Estimating the number of horses and neat cattle at half our population, which is certainly within bounds, the saving in this machine, over that of feeding in the old slovenly way, would be at least 500,000 tons of hay in a year, which at the moderate estimate of \$7 per ton, would amount to an annual saving of three millions and a half of dollars. If we estimate the labor to be saved by the general introduction of improved ploughs, harrows, cultivators, drill-barrows, horse-rakes, mowing machines, threshing machines, &c., which not one farmer in twenty has yet availed himself of, and consider the benefits of the countless new inventions which the genius and enterprise of our countrymen are likely to produce, I cannot be mistaken in assuming, under a view of all these considerations, that every tolerable acre of land, near the borders of the Hudson, may be made to produce to the cultivator, the clear interest of two hundred dollars per annum. There are thousands of acres which already produce double this income.

To strengthen the force of this conclusion, I beg leave to call your attention to the agricultural products of other countries.

Professor Low, one of the latest and best authorities for Scotch husbandry, bases his estimate of farm profits upon an annual rent to the landlord—for Scotch, as well as English farmers, are almost invariably tenants to the nobility and gentry—I say he bases his estimate of the farmer's profits upon an annual rent of 2*l.*, or about nine dollars per acre. He puts down the other burthens, as window and saddle-horse duty, statute or highway labor, poor rates and insurance, at \$141.87, for a farm of five hundred acres. Thus the Scotch farmer, upon his 500 acre farm, pays annually in rent and burthens \$4,641. After deducting this amount from the products of the farm, as well as the expense of family, stock, implements, manure, labor, &c., the professor gives to the farmer, a nett income, from the products of his labor, of 399*l.* 6*s.* 2*d.* (\$1,785,) amounting to 16*s.* (\$3.80) per acre. If we throw out of the account the burthens and rent, which are mere nominal with us, the nett income of the Scotch farmer, clear of every expense, would average seven dollars and seventy-five cents per acre, or upon his 500 acre farm, would amount to \$3,875, instead of \$1,785.

The cultivated lands of England and Wales are computed at 91,000,000 of acres, and the annual product of these lands is estimated by Arthur Young, at one hundred and forty-five millions of pounds sterling, equal to six hundred and forty millions of dollars. More recent estimates put the

agricultural products of Great Britain, including Scotland, at two hundred and sixty millions of pounds. Upon the first estimate we have, as the average product per acre, about \$19.36. To show the burdens of the British farmers, which are an enormous drawback upon the profits of his labor, we will only quote from Arthur Young, who made an agricultural survey of the country some forty years ago, the amount of these burdens in the county of Essex, a district sixty miles long by fifty broad. The tithes amounted to 4s. 9d. (94 cents) on the acre. But I will give gross sums:

| | |
|-------------------|-----------|
| Rents, - - - - | 936,320l. |
| Tithes, - - - - | 225,620l. |
| Poor rates, - - - | 500,000l. |

Exceeding, in the aggregate, seven millions, three hundred thousand dollars, which the farmers of one county annually pay, to the landlords, the clergy, and paupers! And yet, says our account, with all these burdens, their profits from the improved modes of cultivation, were greater in 1805, than when the expenses were much less. Let us imitate their industry and their skill, but may we long be exempt from their rents, rates and tithes.

Let us now examine the statistical data of New-York Agriculture. The cultivated lands in our State were estimated, in 1825, at 7,160,967 acres, and their aggregate value, at the average value of \$25 per acre, at \$179,124,175. The farm stock was estimated to swell this amount to two hundred and twenty millions. Let us suppose, what we believe will be making a pretty fair allowance, that the farmer upon 100 acres, which, with the necessary farm stock, we will put down at \$3,000, produces twenty per cent. upon this capital, or \$600 a year. Deduct seven per cent. from this sum, for interest upon the capital, or for rent, and he will have left, for his labor, and family, and other expenses, \$390. Upon this estimate, it will be perceived our lands do not yield one-third of the produce per acre, upon an average, that is produced upon the farm lands of England. And even the farming in England, we believe, is badly managed in many districts, and is less productive than either that of Scotland or Flanders. We certainly have the capacities, if we will call them into action, of successfully competing, in every branch of productive labor, with the population of the old world.

In recurring to the history of agriculture, we find that a century ago it excelled in the Netherlands, embracing Flanders, and in some districts of Italy, particularly in the valley of the Po. In the former of these countries, a judicious system of rotation, suited to soil and local circumstances, had been adopted; clover and roots had been introduced, and manures were sedulously husbanded and discreetly applied. In addition to these improvements, irrigation had been extensively adopted in the valley of the Po. Although these countries have, during the last century, progressed but comparatively little in agricultural improvement, they nevertheless retain a degree of pre-eminence at this day, and furnish practical examples highly worthy of our imitation. So recently as 80

years ago, agriculture was in a most wretched condition, both in Great Britain and France. Most of the improvements in English husbandry have been made within the last seventy years; those of Scotland during the last fifty years, and those of France since the period of her revolution, or within the last thirty years. These improvements, which have contributed essentially to the prosperity and happiness of the human family, were brought about by the spirited exertions of a few distinguished individuals, such as Young, Sinclair, Davy, Chaptal, Bakewell, and others of minor note, though probably not less efficient; by the application of science to husbandry, and the co-operation of societies formed to promote its improvement. Among the leading features of the great practical agricultural improvement which has so recently taken place in Britain, Loudon places at the head—the introduction of a better system of rotation—the drill system of growing turnips, about 1765; the improvement of live stock, by Bakewell, about 1770; the use of lime in agriculture, and the system of convertible husbandry, which commenced about 1765; the improved plough, by Small, about 1790; and the threshing machine, by Merkle, about 1795; the system of draining or tapping springs, discovered by Anderson from principle, and by Elkinton, by accident, about 1765; the revival of the art of irrigation, by Boswell, in 1780; the field culture of the potatoe about 1750; the introduction of the Swedish turnip, about 1790, of spring wheat, about 1795, and of mangold wurzel at a still later period. The British Board of Agriculture, and the Highland Society of Scotland have effected much towards improvement; and perhaps no country in the world has made greater strides, at any period, in bettering the condition of her husbandry, than Scotland has, during the last half century, under the fostering auspices of the last named society, and which is dispensing its labors of usefulness, with untiring patience and unabating energy.

Although it is difficult to compare the average crops of different countries with any degree of accuracy, I will nevertheless endeavor to do it from the imperfect data to which I have had access, so far as regards some of the staple products of the soil, premising at the same time, that the comparison affords but an imperfect view of the relative amount of farm profits, the disparity in the price of labor, and the general economy of farm management, not coming under notice.

Flanders is a flat, wet, and generally sandy country, illy adapted to the wheat crop. Yet the average over 25 bushels per acre. Lowe gives the average product of different districts, in this grain, according to Radcliff, varies from 20½ to 32 bushels to the acre; mean average product in Scotland, of wheat 24, barley 42, and oats 48 bushels the acre. Loudon states the average product in Britain at 24, 28, and 32 bushels; mean average 26 bushels the acre. In 1790, Washington, in a letter to Arthur Young, computed the average crop in Pennsylvania, then one of our best wheat grow-

ing States, as follows:—Wheat 15 bushels, rye 20, barley 25, oats 30, Indian corn 25, potatoes 75. Strickland, in a report made to the British Board of Agriculture, forty years ago, gave the average wheat crop of our State at 12 bushels the acre, and of Dutchess, then, as now, our best cultivated county, at 16 bushels. An intelligent correspondent of the Baltimore Farmer, who dates Philadelphia county, expresses his doubts whether the average produce in Pennsylvania, with the exception of the potato crop, is as great as it was half a century ago. I am inclined to believe that in our State there has been a manifest improvement in that period; for, although some districts have retrograded, others have advanced with a good deal of celerity.—Well managed farms may be selected in the old river counties, where improvement has made the greatest advances, upon which the average crops have more than doubled during the last few years; where wheat has yielded an average crop of 25 to 30 bushels an acre, corn 70 to 80, potatoes 300, and other crops in proportion, and where cultivated grasses and roots have still more added to the profits of the husbandman.—The maximum produce of our grain crops may be stated, wheat 40 bushels, Indian corn 100, rye 35, oats and barley 60. In this estimate I leave out of view the fertile west, where nature has been profusely bountiful of her gifts, and where man seems to think the soil inexhaustible, and confine my remarks to the valley of the Hudson. These facts suffice to show, that while the condition of our husbandry is bad, it is susceptible of great improvement. What has been done in one district, or on one farm, may be done in others. And if we despair of the present generation to make the desired improvements, let us take care at least to qualify our sons to become better managers than their fathers.

From the estimate I have made of our agricultural products, it would seem that they amount to about 43 millions of dollars per annum. Now if this Convention can be instrumental in adding merely ten per cent. to this amount, by inducing a more profitable mode of culture, they will be instrumental in adding annually four millions three hundred thousand dollars to the capital of the State, independent of the enhanced value of the lands, consequent upon their improved culture. But if they can succeed in awakening, in our legislators, and in our fellow-citizens at large, a spirit of hearty co-operation in the work of improvement, the value of our agricultural products may be doubled. "Agriculture," says Sully, "may be regarded as the breasts from which the state derives its support and nourishment."

The inquiry next presents itself, how are these desired ends to be brought about?—We can make good farmers as we make good officers for our navy and army: Teach the pupil the science as well as the art; instruct the head as well as the hands, and subject him to system and discipline. Give us an Agricultural West Point to begin with, where may be concentrated and taught, all that is useful in theory and excellent in practice. "The education of the head and

connected with the interests and happiness of the largest portion of their fellow-citizens throughout the State.

To advance these interests—to add new stimulus to industry, care, skill and economy, in increasing the productiveness of our rich soils, and in adding fertility to the poorer; to improve the condition and increase the profits of farm stock of every description; to make the various implements of husbandry more perfect, economical and useful; and generally to adapt the improvements and discoveries in science to agricultural pursuits, have occupied the anxious attention of your Committee, and they regret that their time will not allow them to detail and explain the various reasons and motives which have influenced them in presenting and recommending the following resolutions for the adoption of the Convention:—

Resolved, That it is expedient to provide by law, for the establishment of a school of scientific and practical agriculture, and that this Convention respectfully solicit the Legislature of this State to incorporate a company for the above objects, and to endow the said school with such sum, and in such manner, as shall be commensurate with the great benefits to be attained thereby.

Resolved, That an appropriation of public moneys, to excite industry and emulation in agriculture, to reward those who make important discoveries in labor-saving machines, or in other departments of husbandry; or who improve or extend useful methods of cultivation, would tend greatly to increase the resources and revenue of the State, and to promote the diffusion of useful knowledge.

Resolved, That the extensive and increasing ravages of the wheat worm, present a strong claim upon an enlightened Legislature, alive to all the interests of her people, to offer a competent premium for the discovery of a perfect preventive or remedy for the ravages of the said worm.

Resolved, That it be recommended to the friends of agricultural improvement, in every county in this State, to co-operate with this Convention in obtaining legislative aid in furtherance of the objects of the above resolutions, and also in the speedy formation of an agricultural society in every county where there is not one already.

Resolved, That the existing laws in relation to common roads and bridges, are found, by experience, to be very defective and oppressive, inasmuch as the heavy tax which is annually imposed for these objects, is expended so lavishly, injudiciously and temporarily, as to produce no corresponding benefits to the tax-payers or to the community; and in the opinion of this Convention, the whole system requires alteration and amendment.

Resolved, That the agricultural publications, entitled the "Cultivator," published in Albany; the "Genesee Farmer," published in Rochester, and the "New-York Farmer," published in New-York, are eminently calculated to diffuse agricultural knowledge, to make known the various improvements in husbandry, and to excite and call

forth new and valuable discoveries, and that they are therefore recommended to general attention and patronage, and particularly to that of the farmers.

Resolved, That, as property of every description is continually changing hands in a republican government like ours, and real property not more productive or valuable than personal, in the opinion of this Convention, all property, real and personal, should be subject to the same general rule of taxation—assessed and taxed equally wherever the same may be, and in whatever hands it may be found, without regard to ownership or indebtedness.

The above resolutions having been severally read, were unanimously adopted by the Convention.

On motion of Mr. Van Bergen, of Greene, Resolved, That the paper entitled the "Silk-Worm," published in this city, be added to the list of those recommended to the patronage of the community.

Mr. Allen, from the Committee of sixteen, reported a memorial to the Legislature, which, being read, was adopted, and ordered to be signed by the officers of the Convention.

Tuesday evening, 7 o'clock.

The Convention met pursuant to adjournment. On motion of Mr. Shepard, of Cayuga, it was

Resolved, That the thanks of this Convention are due to the Hon. J. A. Dix, Secretary of State, for his very able and luminous report in relation to the geological survey of the State, made to the Legislature January 6, 1836, in pursuance of a resolution of the Assembly, April 6, 1835, and they express the hope that the Legislature will make the appropriation for the purposes recommended in said report.

On motion of Mr. McCollum, of Niagara, it was

Resolved, That such provision be made, as the Legislature shall deem expedient; to encourage the growth and manufacture of silk.

On motion of Mr. Allen, of Erie,

Resolved, That this Convention recommend the introduction of elementary works on agriculture and horticulture, as reading books in our common schools.

On motion of Mr. Nash, of Monroe,

Resolved, That a state agricultural convention be held at the Capitol, in the city of Albany, on the first Thursday of February next, at four o'clock P. M., at which all persons are invited to attend, who take an interest in agricultural pursuits.

On motion of Mr. Frey, of Montgomery,

Resolved, That a copy of the opening address of Judge Buel to the Convention, be requested for publication; and that Mr. Carroll, of Livingston, and Mr. Allen, of Erie, be requested to furnish a copy of their remarks for the press.

On motion of Mr. Hopkins, of Cayuga,

Resolved, That the thanks of this Convention be tendered to the House of Assembly, for the use of their chamber during its sitting.

On motion of Mr. Fuller, of Onondaga,

Resolved, That the thanks of this Convention be given to the President, for the

able and dignified manner with which he has discharged the duties of the Chair.

On motion of Mr. Leland, of Steuben, the Convention adjourned.

J. BUEL, President.

J. M'CALL,
L. BRADISH,
G. WENDELL,
P. PATTERSON,
D. L. DICKINSON,
J. J. VIELE,

Vice Presidents.

Secretaries.

MEMORIAL TO THE LEGISLATURE.

The following is the memorial alluded to in the above proceedings:

To the Legislature of the State of New-York:

The memorial of the subscribers, inhabitants of the State of New-York, assembled in Agricultural Convention, at the Capitol, in Albany, on the 9th February, 1836—respectfully represents:

That your memorialists consider that an acquaintance with the principles of the physical or natural science, embracing the properties of soils and manures—a knowledge of the structure and functions of animals—of the diseases to which they are incident, and the modes of cure;—of the principles of mechanics, in their application to implements of farm labor;—of the agency of heat, air, water and light in the growth of farm crops—and of new plants, their mode of culture, and use in the arts of commerce—as highly essential, in the cultivators of the soil, to the successful prosecution of husbandry, in this age of general improvement. That agriculture is the great business of our State, and the main source of its prosperity—and that no means present to their minds, so likely to insure substantial improvement in this primary branch of labor, as the establishment of a school of scientific and practical agriculture, which shall embrace the best models of practice in all the departments of rural labor: That three committees of the Legislature have reported in favor of the establishment of an agricultural school, with accompanying bills providing therefor, two contemplating the establishment to be made under the auspices, and at the expense of the State, and the other granting corporate powers to an association who had prayed to be incorporated for this purpose; that the latter bill passed the House of Assembly with three dissenting votes; but that this, as well as the other bills, were not finally acted upon, by reason of the late period in the session in which they were introduced, and the press of public business:—your memorialists pray for an act of incorporation, with a restriction therein, limiting the dividends to be derived from such institution to five per cent. per annum, for the above objects, and to endow such institution with such sum, and in such manner, as shall be commensurate with the great benefits to be attained thereby.

Your memorialists further represent, that they are persuaded great benefits to agriculture, and to the substantial interests of the community at large, have resulted from the law of 1819, "to improve the agriculture of this State," by the stimulus which it gave to industry, and the improvements which it in-

hands must always go together, or the health, strength, and efficiency of the physical and mental powers of man can never be duly developed and maintained." Raise the standard of instruction in our common schools, the nurseries of statesmen as well as farmers. Infuse into the juvenile studies of your boys the elementary principles of physical science; of those fixed laws of nature, which regulate and control matter, organic and inorganic, a knowledge of which is as beneficial to agriculture as it is to the art of war, or the healing art. Nay, there is probably not a business in life which can derive higher advantages from some of the sciences than agriculture. "It is not the arbitrary laws of man that improve the condition of man; for if they did, there has been enough of them, such as they are, to have made him perfect long ago. No—they will not do; we want the development of the laws of nature, in agriculture, manufactures, commerce, knowledge," to improve his condition, his habits, and his morals.—Excite emulation, encourage industry, and recompense useful talent and enterprise by pecuniary and honorary rewards. With these teachings and these encouragements, the work of agricultural improvement will be accelerated; intellectual and moral improvement will receive a new impetus; science and art will consort as twin sisters, as legitimately designed; industry will become more honorable and be more honored; agriculture will assume a higher walk and character; and, to borrow Sully's simile, her paps shall teem with nutriment, that shall fill every mouth with plenty and every heart with joy. These things will lead to as benign a result here, as they have every where that they have been put in practice. They are as certain as cause and effect. "Does any one think," to quote a late writer, "that the world is travelled over, so that nothing remains to be explored? So far from it, the spirit of observation, when under the direction of science, labors with tenfold more success, and unfolds, even in the most beaten paths, a thousand resources of which man never dreamed. Look, for example, at the progress of horticulture. How many would have laughed at the idea of forming societies in reference to fruit trees, of which all the kinds were supposed to be familiarly known? And yet who does not know that science is creating new varieties, by following out the suggestions of nature? There can be no doubt that science will be continually drawing out new resources from the vegetable world. Fruits that are now thought worthless, will be multiplied, like the crab apple, into rich and various kinds; roots, like the potato and mandioca, which were poisonous in their natural state, will be disarmed of their venom, and tamed for the service of mankind." "The fact is, that every man, woman and child, has a direct interest in these studies. Every man who owns a beast; every woman who lives where moths corrupt a garment; every child who rambles in his holidays, returns burning with poison from the hedge, has a direct and pressing interest in studies of this description."

On the old continent, it has ever been the fortune of the tillers of the soil, though con-

stituting the mass of population, to occupy a menial and subordinate station in society. Though their privileges have been nominal, their burdens have been onerous; they have been literally the tax paying class.—We profess to have thrown off the shackles from our yeomanry, and to hail them, particularly when we want their votes, as the enlightened sovereigns of the land; and sovereigns they truly are, and must continue to be, while our country remains free. But are they treated as such? Are they educated as such? We have established and endowed schools for the special instruction of the minor classes; but have we established any for the special benefit of the major class—the working class—the farmer and mechanic? We spend millions to protect our commerce; and we pay other millions in the form of custom-house duties—for it is the consumer who ultimately pays—upon the foreign commodities we consume, to encourage and sustain our manufacturing establishments. This is as it should be. But what direct aid do we give to our agriculture—the business that freights our commerce, and feeds our manufacturers? We have no discriminating duty which protects this branch of our labor, nor do we ask for any. But we do ask for a more equal participation in the blessings of public education, and for legislative patronage, to enable us to develop the natural resources of our soil.

There is another point, I think, in which justice is withheld from the agriculturist. I mean in the imposition of our taxes. The balance of our mercantile and professional, and I believe manufacturing capital, consists in personal estate. The law allows so much of this to be exempt from assessment and tax as is equal to their debts, which are too often enough to cover their personal estate. The property of the farmer consists principally of his farm—his personal effects being comparatively trifling, or of that description which the law exempts; and though he owes to the extent of his whole farm, the assessor is not allowed to abate a cent of its value, in consequence, upon the tax roll. The inequality of this rule will appear by supposing two individuals to start in business with a credit each of \$10,000; one buys a farm for this amount, and the other buys merchandise. Neither are in fact worth anything, above their debts. By the existing law, the farmer would be compelled to pay a tax on \$10,000, while the merchant would not be required to pay a cent's tax. Is this right? Is it equitable? Does this not savor somewhat of the spirit of the aristocratic notions of the old world, which imposes onerous burthens upon the farmer? The impression is irresistible upon my mind, that although we have done much to elevate the farmer to his true rank in society, we have not done enough to improve the powers of his intellect—to make him wise in his business, and useful to the republic.

I come now to the question, what can this Convention do in furtherance of these great objects? To this I reply—imitate the industry, liberality, and perseverance of the good men who have achieved equally diffi-

cult tasks, in other branches of public improvement, in our day and country. Inform the public mind, digest your plans, and enlist the co-operation of your fellow-citizens. Petition your Legislature for the aid which justice and sound policy demand; and if they deny or neglect your prayers, carry your appeal to their fears: *threaten*, that, with respectful but persevering importunity, *you will continue to urge your claims* till more auspicious times, or a more enlightened policy shall crown your efforts with success. Imitate the persevering examples of Ami Dardin and Corn's Higgins, who renewed their applications for legislative justice, or legislative bounty, for more than twenty years, and until they finally gained a hearing, and got their reward.—There is no dishonor in being discomfited in a good cause, even twice or thrice, and there is much pleasure in finally triumphing.

On motion of Mr. Viele of Rensselaer, a committee of one from each Senate district was appointed to nominate officers for this Convention, and to report names at the next meeting. The committee appointed in accordance with the above motion, was Messrs. A. Van Bergen, H. Holmes, P. Jones, Gen. Hathaway, T. D. Burrall, J. McCollum, Charles Livingston, and P. Pelton.

On motion of Mr. Leland, of Steuben, a committee of two from each Senate district was appointed to report the proper business to be brought before this Convention, and the order of business that ought to be adopted therein.

The committee chosen in pursuance of the above resolution, were H. H. Jones and J. L. Graham, of the 1st district; J. Chambers and W. Cunningham, 2d district; A. McIntyre and Joab Center, 3d district; L. Bradish and G. Wendell, 4th district; J. B. Yates and J. B. Lewis, 5th district; J. R. Drake and Z. A. Leland, 6th district; J. Hopkins and J. C. Fuller, 7th district; C. H. Carroll and L. F. Allen, 8th district; together with the chairman.

The Convention adjourned to meet at this place to-morrow at 3 o'clock, P. M.

Tuesday, February 2.

The Convention met at 3 o'clock, P. M. Mr. Van Bergen, from the committee to nominate officers for this Convention, reported the following names:

J. Buel, of Albany, President. G. Wendell, of Washington, 1st Vice-President; J. McCall, of Allegany, 2d do.; L. Bradish, of Franklin, 3d do.; P. Patterson, of Genesee, 4th do. D. L. Dickinson, of Broome, and J. J. Viele, of Rensselaer, Secretaries.

The report was unanimously adopted.

Mr. Carroll of Livingston, from the committee appointed to report the business to be brought before this convention, reported as follows:

The committee of sixteen, who were appointed to consider and report suitable subjects for the action of the N. Y. State Agricultural Convention, have entered upon the consideration of the duties assigned them, with a thorough conviction, that the deliberations of this convention were intimately

duced in the various branches of husbandry; and believing that a further appropriation would be alike beneficial, in developing the capacities of the human mind, and of the soil, for improvement, and in augmenting the resources and revenues of the State,—they respectfully solicit that an appropriation be made, with the view of exciting laudable emulation, and of rewarding those who make important discoveries in labor-saving machines, or in other departments of husbandry—who introduce new and valuable breeds of animals, plants or seeds—or who improve or extend useful methods of cultivation, and that they believe such appropriation would tend greatly to increase the resources and revenues of the State, and to promote the diffusion of useful knowledge.

And your memorialists further represent, that within the last year, an insect, denominated the grain worm, before unknown among us, has committed serious depredations upon the wheat crop, in the northeast counties of this State; that it is progressing south and west, and threatens immense damage to this great staple product of our State, unless efficient means can be discovered to prevent its ravages. Your memorialists would respectfully suggest, that the Legislature offer a pecuniary reward, of sufficient amount to call into action the scientific and practical talents of our citizens, for the discovery of a preventive of the evil—the reward to be withheld until the efficiency of the preventive shall be fully and satisfactorily established.

J. BUEL, President.

J. McCall,
L. Bradish,
G. Wendell,
P. Patterson,
D. S. Dickinson,
J. J. Vile,

Vice Presidents.

Secretaries.

RECIPE FOR CURING BEEF.—A friend has handed us the following recipe for curing beef. To every 100 lbs. of beef add a pickle compound of 9 lbs. of salt, 3 qts. molasses, 1 lb. saltpetre, and 2 oz. salaratus. The ingredients should be boiled together and skimmed, and added to the beef when cold. Beef cured in this way will be perfectly sweet, tender and good.—[N. H. Spec.]

SMITH & VALENTINE,

STEREOTYPE FOUNDERS,

Are prepared to execute orders in their line,
at 212 Grand street, New-York.

RAILWAY IRON.

95 tons of 1 inch by 1 inch,
200 do. 1 1/2 do. 1 do.
40 do. 1 1/2 do. 1 do.
800 do. 2 do. 1 do.
800 do. 2 1/2 do. 1 do.
soon expected.

350 do. of Edge Rails of 36 lbs. per yard, with the requisite chairs, keys and pins.
rough iron Rims of 30, 33, and 36 inches diameter for Wheels of Railway Cars, and of 60 inches diameter for Locomotive Wheels.

Axles of 2 1/2, 3, 3 1/2, 4, 5, 6, and 8 inches in diameter, for Railway Cars and Locomotives, of patent iron.

The above will be sold free of duty, to State Governments and Incorporated Governments, and the drawback taken in part payment.

A. & G. RALSTON,
9 South Front street, Philadelphia.
Models and samples of all the different kinds of Rails, Chairs, Pins, Wedges, spikes, and Splicing Plates, in use both in this country and Great Britain, will be exhibited to those disposed to examine them.

PROPOSALS

Are invited for excavating and removing earth at Throgs Point. The whole quantity proposed to be removed at this time, amounting to between sixty and eighty thousand cubic yards, will be divided into five sections, for each of which a separate contract will be entered into. A temporary rail track, 4 or 5 rail cars, 12 wheel barrows, 15 carts, a plough, together with machinery and apparatus for loading two cars each with two cubic yards every 3 or 4 minutes, will be provided for each section.

Proposals are also invited for laying stone of a large size in a sea wall.

These proposals will be received until the 20th instant.

For particular information, apply to the Engineer's Office, at Governor's Island.

THE NEWCASTLE MANUFACTURING COMPANY, incorporated by the State of Delaware, with a capital of 200,000 dollars, are prepared to execute in the first style and on liberal terms, at their extensive Finishing Shops and Foundries for Brass and Iron, situated in the town of Newcastle, Delaware, all orders for LOCOMOTIVE and other Steam Engines, and for CASTINGS of every description in brass or iron. RAILROAD WORK of all kinds finished in the best manner, and at the shortest notice.

Orders to be addressed to

Mr. EDWARD A. G. YOUNG,

Superintendent, at Newcastle, Delaware.

Feb 20—yif

AMES' CELEBRATED SHOVELS, SPADES, &c.

300 dozens Ames' superior back-strap Shovels
150 do do do plain do
150 do do do cast steel Shovels & Spades
50 do do Gold-mining Shovels
100 do do plated Spades
50 do do socket Shovels and Spades.

Together with Pick Axes, Churn Drills, and Crow Bars (steel pointed), manufactured from Salisbury refined Iron—for sale by the manufacturing agents,

WITHERELL, AMES & CO.

No 2 Liberty street, New-York.

BACKUS, AMES & CO.

No. 8 State street, Albany.

N. B.—Also furnished to order, Shapes of every description, made from Salisbury refined Iron. 4—yif

PATENT RAILROAD, SHIP AND BOAT SPIKES.

The Troy Iron and Nail Factory keeps constantly for sale a very extensive assortment of Wright Spikes and Nails, from 3 to 10 inches, manufactured by the subscriber's Patent Machinery, which after five years successful operation, and now almost universal use in the United States, (as well as England, where the subscriber obtained a patent,) are found superior to any ever offered in market.

Railroad Companies may be supplied with Spikes having countersink heads suitable to the holes in iron rails, to any amount and on short notice. Almost all the Railroads now in progress in the United States are fastened with Spikes made at the above named factory—for which purpose they are found invaluable, as their adhesion is more than double any common spikes made by the hammer.

All orders directed to the Agent, Troy, N. Y., will be punctually attended to.

HENRY BURDEN, Agent.

Troy, N. Y., July, 1831.

Spikes are kept for sale, at factory prices, by I. & J. Townsend, Albany, and the principal Iron Merchants in Albany and Troy; J. I. Brower, 222 Water street, New-York; A. M. Jones, Philadelphia; T. Janviers, Baltimore; DeGrand & Smith, Boston.

P. S.—Railroad Companies would do well to forward their orders as early as practicable, as the subscriber is desirous of extending the manufacturing so as to keep pace with the daily increasing demand for his Spikes.

13—3m

H. BURDEN.

RAILROAD CAR WHEELS AND BOXES, AND OTHER RAILROAD CASTINGS.

Also, AXLES furnished and fitted to wheels complete at the Jefferson Cotton and Wool Machine Factory and Foundry Paterson, N. J. All orders addressed to the subscribers at Paterson, or 60 Wall street, New-York, will be promptly attended to.

Also, CAR SPRINGS.

Also, Flange Tires, turned complete.

JR. ROGERS, KETCHUM & GROSVENOR.

STEPHENSON,

Builder of a superior style of Passenger Cars for Railroad.

No. 264 Elizabeth street, near Bleecker street,

New-York.

RAILROAD COMPANIES would do well to examine these Cars, a specimen of which may be seen on that part of the New-York and Harlem Railroad now in operation.

RAILROAD CASTINGS.

MANY & WARD, Proprietors of the Albany Eagle Air Furnace and Machine Shop, will make to order Castings, Chairs and Knives, and every other description of Castings required for Railroads.

R—17 feb 14

ARCHIMEDES WORKS.

(100 North Moor St. N. Y.)

NEW YORK, February 12th, 1836.

The undersigned begs leave to inform the proprietors of Railroads that they are prepared to furnish all kinds of Machinery for Railroads, Locomotive Engines of any size, Car Wheels, such as are now in successful operation on the Camden and Amboy Railroad, none of which have failed—Castings of all kinds, Wheels, Axles, and Boxes, furnished at shortest notice.

H. R. DUNHAM & CO.

4—yif

OFFICE LONG ISLAND RAILROAD CO.

New-York, March 1, 1836.

NOTICE TO RAILROAD CONTRACTORS.

Proposals for the Graduation or formation of the Road Bed of a Division of the Long Island Railroad, extending from Jamaica to Jericho, (a distance of about 15 miles,) will be received, at the Office of the Co., No. 40 Front street, Brooklyn, from the 20th to the 25th inst., during which period, those disposed to contract, will obtain the requisite information, at the Office in Brooklyn, or at Mr. Van Cull's Tavern, in Jamaica.

Also, will be received, on or before the 15th inst., Proposals for the construction of Car and Engine Houses, to be erected in Jamaica, and in Bedford, or its vicinity; the plans of which, with specifications, will be exhibited and explained, by Mr. T. C. Gibbs, at the office in Brooklyn.

By order of the Board of Directors

WILLIAM GIBBS MCNEILL,

Engineer of the Company.

JAMES P. KIRKWOOD,

Resident Engineer

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PROPOSALS

FOR THE REPUBLICATION OF THE REPORTS OF THE BALTIMORE AND OHIO RAILROAD COMPANY;

Condensed so as to include, together with other matter added thereto, all that is known at the present day of the location and the application of Motive Power and Machinery thereupon, accompanied with explanatory drawings. The whole being intended to serve as a Manual of the Railroad System, for the use of Civil Engineers, to which is prefixed a history of the Baltimore and Ohio Railroad Company.

The work, whose reports it is thus intended to republish, was the first of any extent commenced in this country for the purposes of general transportation; and its early history is but a series of experiments, costly to the Company which had it in charge, but furnishing results of the greatest value and importance to others. The character of the country through which the road passed, involved every species of excavation; and in the construction of the Railway, almost every mode was successively tried for the purpose of ascertaining the best. While portions of the road were straight, others were of the smallest admissible curvature, and the locomotive power employed had to be such, therefore, as was suitable to both cases. This led to a series of experiments in this department of the Railroad System, which has resulted in the production of Engines preferable to any in use elsewhere—equal in speed to the best imported, and far superior in efficient power. From all these circumstances, the reports of the Baltimore and Ohio Railroad, from its commencement to the present day, have been sought for by Civil Engineers for the sake of the knowledge which they contain, and the frequent demand for them has suggested to the subscriber their republication, with such additional matter as shall constitute a Manual of the Railroad System in the present state of knowledge on the subject.

The reports are now difficult to be procured, and but few complete sets are known to be in existence. While the proposed republication will therefore be of use to the profession of Civil Engineering, it will be the means also of preserving the record of a work whose importance and value are now universally appreciated. The work will be divided into five parts.

I. History of the Baltimore and Ohio Railroad Company.

II. The location of Railroads, including the principles of reconnaissance, general instrumental surveys, and location for construction.

III. The construction of Railroads, including the excavation and masonry and the construction of the Railway on the graduated surface, turn-outs, weighing, &c.

IV. The motive power including engines, cars, wagons, &c.

V. Forms of contracts for every species of work which has to be performed in the construction of a Railroad.

As it is not practicable to ascertain what sized volume or volumes the contemplated work will make, the price cannot be fixed, but Railroad Companies and individuals who may subscribe for it, may rest assured, that it will be made as reasonable as the nature of it will permit. Orders directed to

F. LUCAS, Jr. Publisher,

Jan., 1836. No. 133 Market street, Baltimore.